

Ideal-Standard E Type CF gas boilers Installation instructions

Sfb (56)

UDC 697.326

June 1975

These instructions supersede all previous installation instructions issued for these appliances.

GENERAL DATA

TABLE 1

Boiler Size	CF 35	CF 50	CF 60	CF 80	CF 105
No. of Main Burner Bars (Broy Cat. 3108 AB 14037)	1	2	2	3	4
Main Burner Injector(s)					
Town Gas Groups 4 & 5 Bray Cat. 10	1 x size 3800	2 x size 3000	2 x size 3400	3 x size 2800	4 x size 2900
Natural Gas Bray Cat. 16	1 x size 1200	2 x size 900	2 x size 1000	3 x size 900	4 x size 800
Honeywell Pilot Injector					
Town Gas Groups 4 & 5	CAR 22	CAR 22	CAR 22	CAR 22	CAR 22
Natural Gas	BCR 18	BCR 18	BCR 18	BCR 18	BCR 18
Flue Outlet size	102 mm (4")	102 mm (4")	102 mm (4")	127 mm (5")	127 mm (5")
Gas Supply Connection	$\frac{1}{2}$ " BSP	$\frac{1}{2}$ " BSP	$\frac{1}{2}$ " BSP	$\frac{3}{4}$ " BSP	$\frac{3}{4}$ " BSP
Flow Connections	1" BSP	1" BSP	1" BSP	1" BSP	$1\frac{1}{4}$ " BSP
Return Connection (Pump)	$\frac{3}{4}$ " BSP	$\frac{3}{4}$ " BSP	$\frac{3}{4}$ " BSP	$\frac{3}{4}$ " BSP	1" BSP
Return Connection (Gravity)+	1" BSP	1" BSP	1" BSP	1" BSP	$1\frac{1}{4}$ " BSP
Maximum Static Water Head	36.6 m (120')	36.6 m (120')	36.6 m (120')	36.6 m (120')	36.6 m (120')
Weight (Standard Model)	95 kg (209 lb)	127 kg (281 lb)	127 kg (281 lb)	161 kg (355 lb)	197 kg (435 lb)
Weight with SB Kit	105 kg (231 lb)	137 kg (303 lb)	137 kg (303 lb)	171 kg (377 lb)	-
Electricity Supply	200/250 Volts AC Single Phase 50 Hz				
External Fuse Rating	3 amp	3 amp	3 amp	3 amp	3 amp
Water Content	8.6 litres (1.9 gall)	13.4 litres (3.0 gall)	13.4 litres (3.0 gall)	18.2 litres (4.0 gall)	22.7 litres (5 gall)
Gas Council Appliance Number	41 399 55	41 399 56	41 399 57	41 399 66	41 399 91

+ These return toppings are for connection to gravity circuits only:

in no circumstances should they be connected to a pumped circuit.

of the heat exchanger.

Refit the flue cleanout cover to the boiler after checking that the sealing gasket is in good condition.

Refit the burner assembly to the boiler after checking that the sealing gasket is in good condition. Complete the gas and electric connections.

Note: The flue cleanout cover and burner assembly gaskets must be replaced if found to be damaged or deteriorated.

Pilot Burner

Light the boiler and check that:-

1. The pilot flame impinges on the thermocouple head and that the position of the thermocouple relative to the pilot burner and the main burner is as shown (see Fig.1)
2. The pilot flame is about 25 mm (1") long (to adjust, remove the protective screw cap adjacent to the gas control buttons (Fig.2) and turn the screw then revealed clockwise to decrease or anticlockwise to increase the pilot flame length).

Setting and Adjustment of Gas Pressure

Table 2 gives details of rated boiler output with related manifold gas pressure and heat inputs. The location of the manifold pressure adjustment screw on the gas control is shown in Figure 2.

A pressure test nipple for checking the burner manifold gas pressure is provided on the gas control outlet pipe.

Replacement of Faulty Combination Gas Control

Remove the burner assembly from the boiler as described above. Disconnect the thermocouple and the pilot gas pipe at both ends, and remove. Disconnect the gas inlet and outlet pipes from the gas control. Fit the replacement control using an appropriate jointing compound. (An arrow on the valve indicates the direction of gas flow).

Reconnect the pilot pipe and thermocouple. Refit the burner to the boiler and reconnect the gas union, and the electrical leads to the gas control (Fig.2).

Turn on the main gas cock and check for leaks up to the gas control. Reconnect the electricity and light the boiler, following the procedure on the lighting plate on the inside of the jacket door. After lighting the main burner, check for leaks at all joints.

Replacement of Faulty Burner Bars

(NOTE:- Air baffles are not fitted to 35 and 80 size boilers).

Straighten the tab(s) locating the air baffle(s) and remove the baffle(s) by lifting upward. Remove the nut and washer securing the burner and slide the burner off horizontally. Fit the new burner in the same position and secure with nut and washer. Do not overtighten the nut. Replace the air baffle(s) in position and secure by bending over the tab(s).

Boilers with Serial Code Numbers prefixed by the letters ALX are fitted with a burner assembly differing in detail from that described and illustrated in these servicing instructions.

The burner bars used are Bray Cat.3102 AB 14008, which have separate aluminium anti-flash shields.

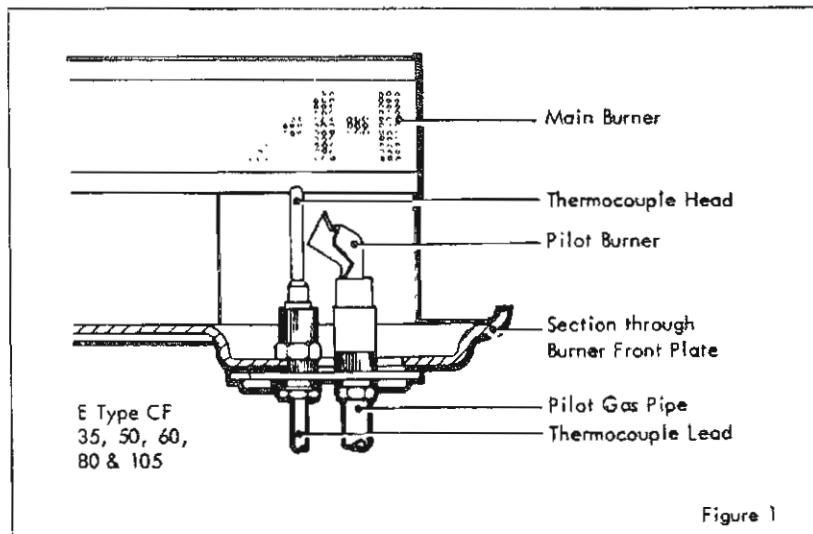


Figure 1

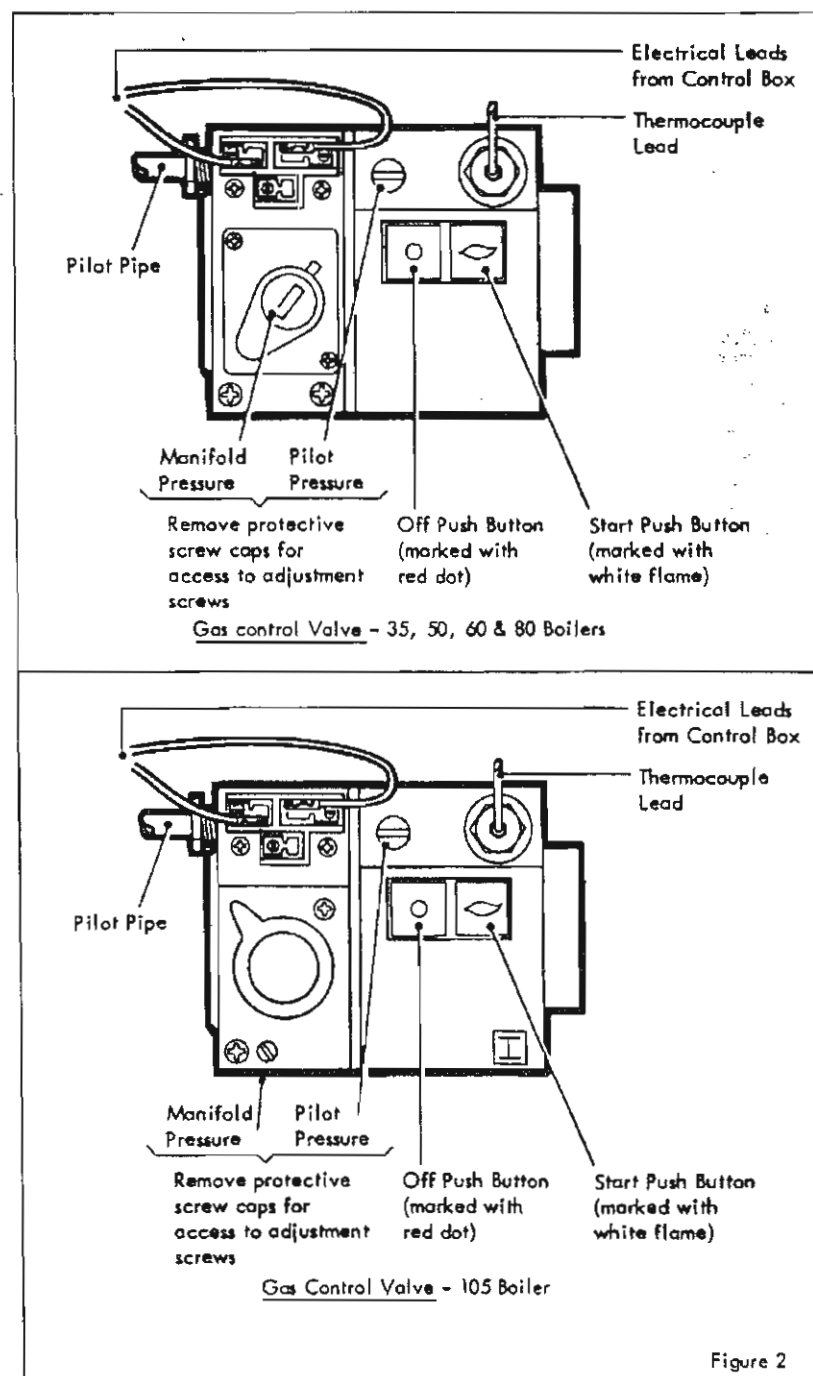


Figure 2

The performance of these burner assemblies is exactly the same as those normally fitted to this series of boilers. However, the procedure for changing a faulty burner bar differs slightly from that given in the instructions above. The following sequence should be adopted:-

1. The two types of burner bar are interchangeable and therefore the Bray Cat. 3108 AB 14037, shown in the Parts List, may be used to replace Bray Cat. 3102 AB 14008 bars fitted as original equipment.

2. Remove the aluminium anti-flash shields on each side of the burner to be changed by straightening the tabs. (On 50, 60 and 105 size boilers the central air baffle is attached to the anti-flash shield in the centre of the assembly).

3. Remove the nut and washer securing the burner and slide off the burner horizontally. Fit the new burner in the same position, and secure with washer and nut. Take care not to overtighten the nut.

4. Replace the anti-flash shields and secure by bending up the tabs. Ensure that the air baffle (if fitted) is correctly located centrally between the burners. (Air baffles are not fitted to 35 and 80 size boilers).

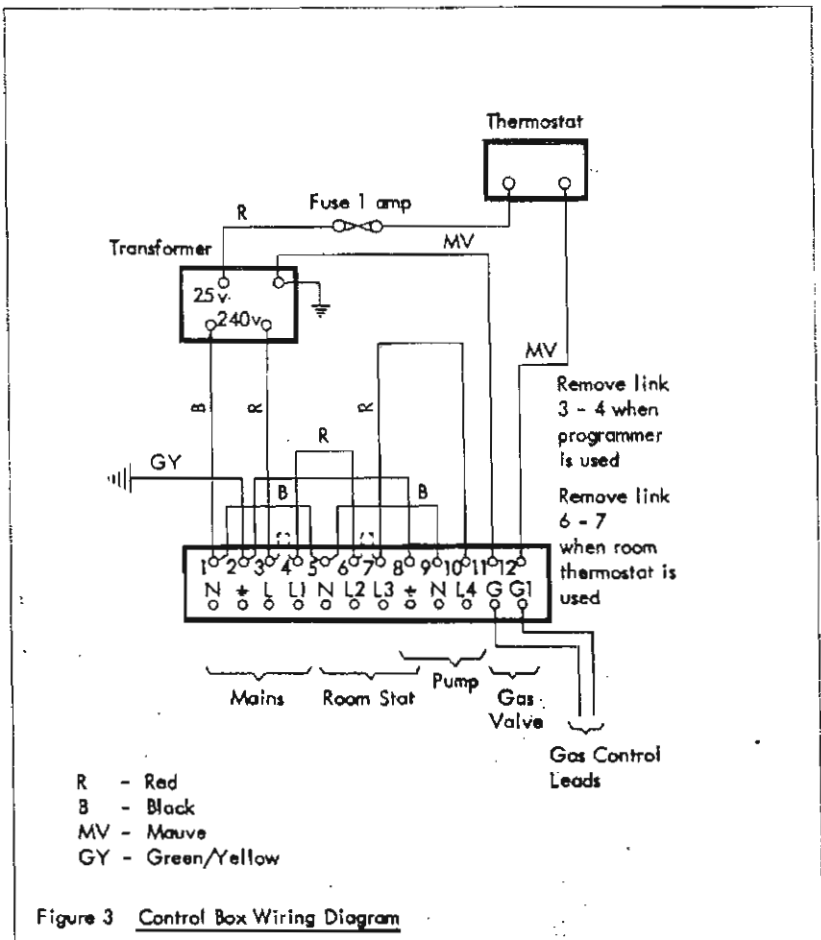
Replacement of Fuse

Access to the fuse is obtained by removing the cover of the control box. The fuse is of the 32 mm (1 1/4") glass cartridge type and is rated at 1 amp.

Control Box

Fig. 3 shows the control box circuit. Check that all external wiring and electrical connections are in good condition and correctly made. If a fault develops in the control box and it cannot readily be detected, the complete box should be replaced as follows:-

1. Disconnect all leads to the control



box.

2. Remove the thermostat phial from its pocket.

3. Unfasten the four control box securing screws and remove box from boiler.

4. Fit new control box and reconnect all electrical leads.

5. Replace thermostat phial in its pocket.

A faulty thermostat may be replaced on site as follows:-

TABLE 2

Boiler	CF 35				CF 50				CF 60			
	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h
Boiler Input*	12.0	41.0	14.0	48.0	15.8	54.0	20.5	70.0	19.9	68.0	23.4	80.0
Boiler Output To Water	8.8	30	10.3	35	11.7	40.0	15.2	52.0	14.7	50.0	17.3	59.0
Manifold Pressure	mbar		mbar		mbar		mbar		mbar		mbar	
	(gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)	"W.G. (gauge)
Town Gas Group 4	3.7	1.5	5.0	2.0	2.5	1.0	3.75	1.5	3.0	1.2	4.0	1.6
Town Gas Group 5	4.5	1.8	5.7	2.3	3.0	1.2	4.5	1.8	3.5	1.4	4.75	1.9
Natural Gas	8.7	3.5	11.2	4.5	6.0	2.4	10.25	4.1	8.5	3.4	11.5	4.6

Boiler	CF 80				CF 105			
	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h
Boiler Input*	24.3	83.0	32.6	111	32.3	110	41.3	141
Boiler Output To Water	17.6	60	23.4	80	23.5	80	30.8	105
Manifold Pressure	mbar	"W.G. (gauge)	mbar	"W.G. (gauge)	mbar	"W.G. (gauge)	mbar	"W.G. (gauge)
	(gauge)		(gauge)		(gauge)		(gauge)	
Town Gas Group 4	2.75	1.1	4.7	1.9	2.5	1.0	4.25	1.7
Town Gas Group 5	3.2	1.3	5.5	2.2	3.0	1.2	5.0	2.0
Natural Gas	6.5	2.6	11.5	4.6	8.2	3.3	13.2	5.3

*To obtain gas consumption:-

(a) In cu.ft/h - Divide heat input (Btu/h) by C.V. of gas (Btu/cu.ft).

(b) In litres/second - Divide heat input

(kW) by C.V. of gas (MJ/m³).

1. Switch off the electricity supply.
2. Remove thermostat phial from its pocket in boiler.
3. Remove the four screws securing the front panel assembly and withdraw from boiler.
4. Pull off the thermostat knob. Unscrew and remove the locknut and washer recessed behind the panel.
5. Disconnect electrical leads to thermostat and remove instrument from control box.
6. Fit replacement thermostat to control box using the locknut and washer.

7. Replace front panel assembly in control box and fasten securing screws.
8. Reconnect electrical leads to control box.
9. Replace thermostat phial in boiler pocket.

Checking Operation of Controls

The initial lighting procedure is in itself a test of the gas controls and ancillary equipment.

Pump and Room Thermostat (SB models only)

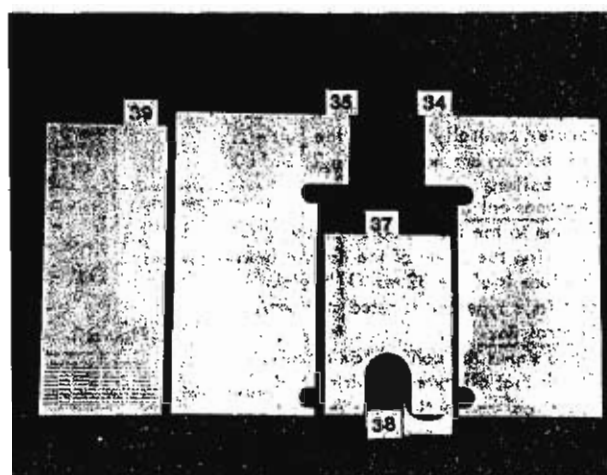
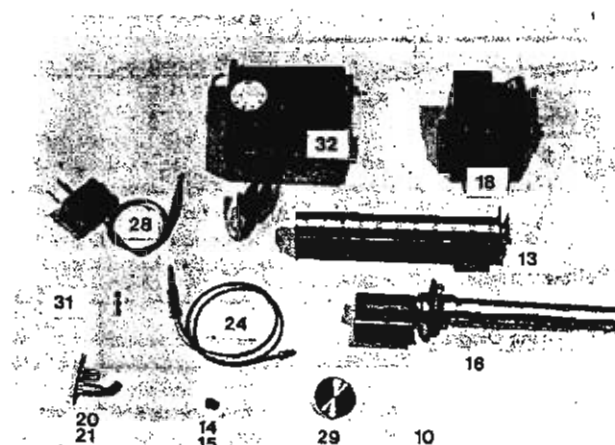
The operation of the pump and room thermostat may be checked by turning

the room thermostat ON and OFF and, by placing a hand on the pump, feeling the slight vibration when the pump is operating. Unions and isolating valves facilitate the replacement of a faulty pump.

Spare Parts

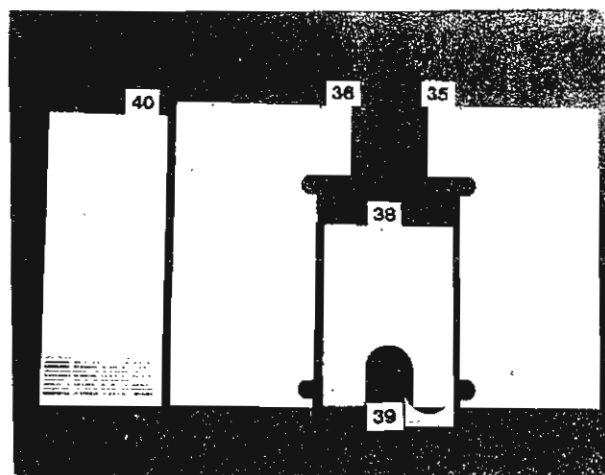
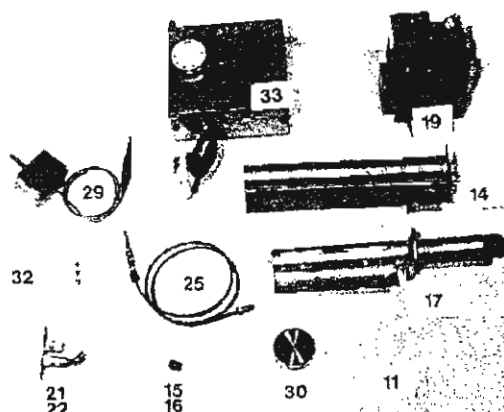
An illustrated list of spare parts follows. When ordering, please quote the description and the maker's part number.

E Type CF 35 (2 Section)
Conventional Flue Multi Gas Boiler
Ideal-Standard
41-399-55



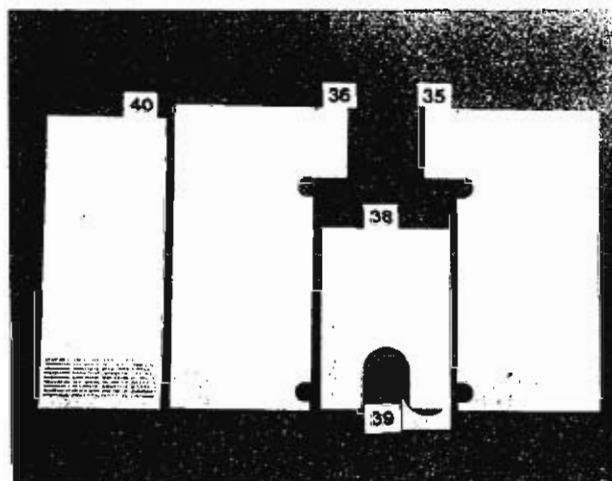
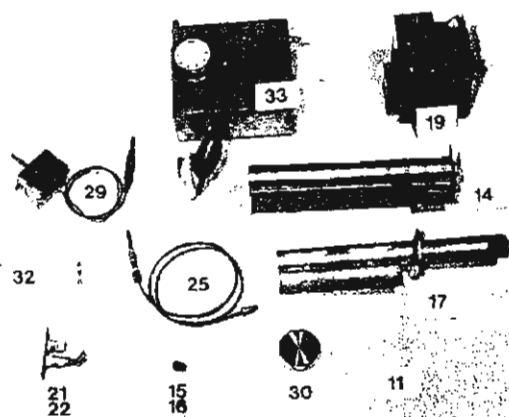
Key Number	British Gas Part Number	Maker's Part Number	Description	Quantity
10	319 926	129818033	Sightglass and gasket (1.5 asbestos millboard)	1
11		129818035	Sightglass frame with sightglass and gasket with 2-M5 wing nut	1
13	399 920	129818040	Multigas Burner (Bray Cat.3108 AB 14037) (with anti-flashover shield) with 1-M5 washer form A 1-M5 hex. nut	1
14	398 076	129003614	Burner Injector (Town's gas) (Bray Cat.10 size 3800)	1
15	398 323	169120450	Burner Injector (Natural gas) (Bray Cat.16 size 1200)	1
16	399 921	129528090	Burner manifold (Bray Cat.3400 AB 14013) and 1/8" BSP test nipple with 3-M6 x 10 pozi pan screw	1
18	392 514	586521300	1/2" BSP Combination gas valve (Honeywell V8800 A 1014)	1
20	390 426	586861602	Pilot Burner (Honeywell Q.314 A4636) with Town Gas Injector (CAR 22) 2-M5 x 6 lg. pozi pan screws	1
21	390 427	586861609	Pilot Burner (Honeywell Q.314 A 4636) with Natural Gas Injector (BCR 18) 2-M5 x 6 lg. pozi pan screws	1
24		586811710	Thermocouple (Honeywell Q.309 A 1202)	1
28	382 214	586811511	Thermostat (Ranco C26-527)	1
29	354 379	586811517	Thermostat Knob	1
31	319 924	586811800	1 Amp Fuse (glass cartridge 1/2" dia. x 1 1/2")	1
32	354 689	586811260	Control Box complete (including Key No's. 28, 29, 30 & 31)	1
34	354 693	129968112	LH side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
35	354 694	129968114	RH side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
37	354 617	129958116	Jacket Top Panel (white stove enamel)	1
38	354 606	129928122	Jacket Top Panel infill piece (white stove enamel)	1
39	354 710	129968118	Jacket Front Panel (white stove enamel) with instruction plate and nameplate	1
40		129528110	Jacket complete (white stove enamel)	1

E Type CF 50 (3 Section)
Conventional Flue Multi Gas Boiler
Ideal-Standard
41-399-56



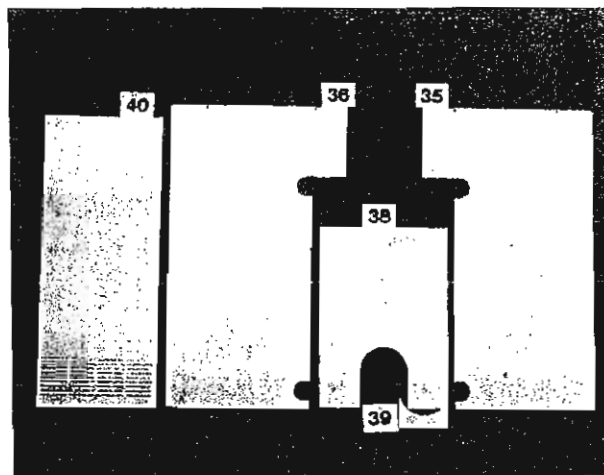
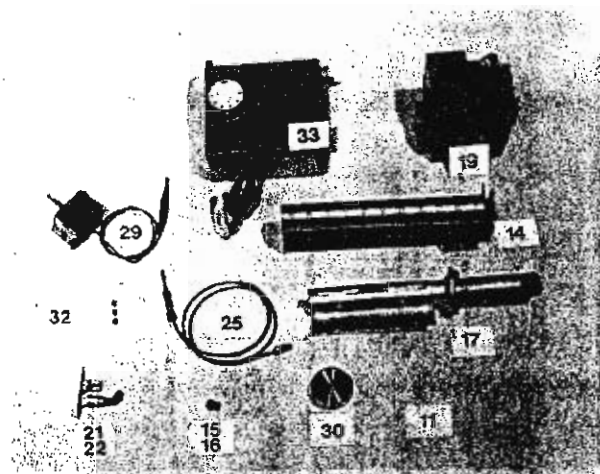
Key Number	British Gas Part Number	Maker's Part Number	Description	Quantity
11	319 926	129818033	Sightglass and Gasket (1.5 asbestos millboard)	1
12		129818035	Sightglass Frame with sightglass and gasket with 2-M5 wing nut	1
14	399 920	129818040	Multigas Burner (Bray Cat. 3108 AB 14037) (with anti-flashover shield) with 1-M5 washer form A 1-M5 hex. nut	2
15	398 072	129003611	Burner Injector (Town's Gas) (Bray Cat. 10 size 3000)	2
16	398 344	169120452	Burner Injector (Natural Gas) Bray Cat. 16 size 900	2
17	399 923	129988090	Burner Manifold (Bray Cat. 3400 AB 14014) burner baffle (Aludip) and 1/8" BSP test nipple with 3-M6 pozi pan screw	1
19	392 514	586521900	1/2" BSP Combination gas valve (Honeywell V8800 A 1014)	1
21	390 426	586861602	Pilot Burner (Honeywell Q. 314 A 4636) with Town's Gas Injector (CAR 22) 2-M5 x 6 lg. pozi pan screws	1
22	390 427	586861609	Pilot Burner (Honeywell Q. 314 A 4636) with Natural Gas Injector (BCR 18) 2-M5 x 6 lg. pozi pan screws	1
25		586811710	Thermocouple (Honeywell Q. 309 A 1202)	1
29	382 214	586811511	Thermostat (Ranco C26-527)	1
30	354 379	586811517	Thermostat Knob	1
32	319 924	586811800	1 Amp Fuse (glass cartridge 1/2" dia. x 1 1/2")	1
33	354 689	586811260	Control Box complete (including Key No's. 29, 30, 31 & 32)	1
35	354 693	129968112	LH Side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
36	354 694	129968114	RH Side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
38	354 617	129958116	Jacket Top Panel (white stove enamel)	1
39	354 606	129928122	Jacket Top Panel Infill piece (white stove enamel)	1
40	354 710	129968118	Jacket Front Panel (white stove enamel) with instruction plate and nameplate	1

E Type CF 60 (3 Section)
 Conventional Flue Multi Gas Boiler
 Ideal-Standard
 41-399-57



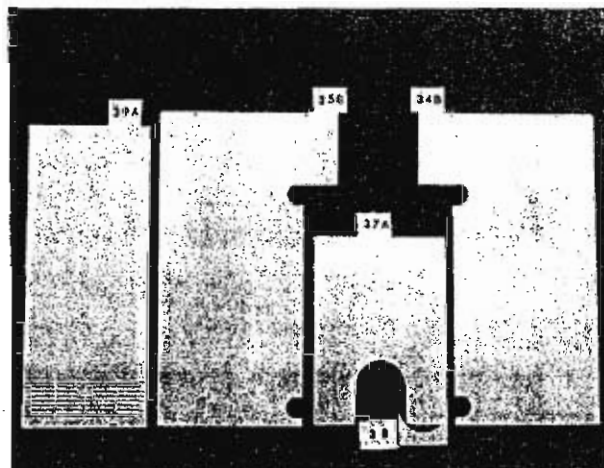
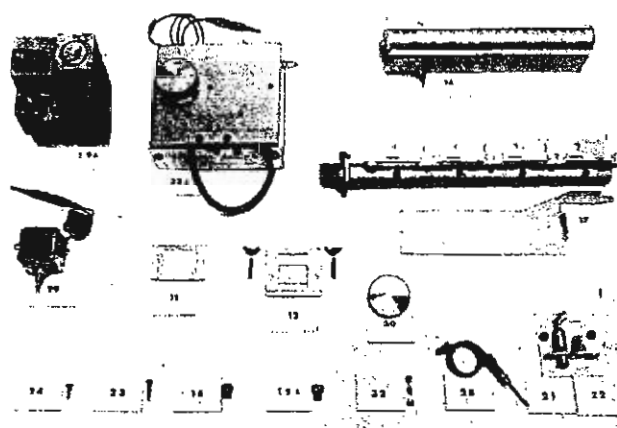
Key Number	British Gas Part Number	Maker's Part Number	Description	Quantity
11	319 926	129818033	Sightglass and gasket (1.5 millboard)	1
12		129818035	Sightglass Frame with sightglass and gasket with 2-M5 wing nut	1
14	399 320	129818040	Multigas Burner (Bray Cat.3108 AB 14037) (with anti-flashover shield) with 1-M5 washer form A 1-M5 hex. nut	2
15	398 073	129003612	Burner Injector (Town's Gas) (Bray Cat.10 size 3400)	2
16	398 322	169120451	Burner Injector (Natural Gas) (Bray Cat.16 size 1000)	2
17	399 923	129988090	Burner Manifold (Bray Cat.3400 AB 14014) burner baffle (aludip) and 1/8" BSP test nipple with 3-M6 x 10 pozi pan screw	1
19	392 514	586521900	1/2" BSP Combination gas valve (Honeywell V8800 A1014)	1
21	390 426	586861602	Pilot Burner (Honeywell Q.314 A 4636) with Town's Gas Injector (CAR 22) 2-M5 x 6 lg. pozi pan screws	1
22	390 427	586861609	Pilot Burner (Honeywell Q.314 A4636) with natural gas injector (BCR 18) 2-M5 x 6 lg. pozi pan screws	1
25		586811710	Thermocouple (Honeywell Q.309 A 1202)	1
29	382 214	586811511	Thermostat (Ranco C26-527)	1
30	354 379	586811517	Thermostat Knob	1
32	319 924	586811800	1 Amp Fuse (glass cartridge 1/2" dia. x 1 1/2")	1
33	354 689	586811260	Control Box complete (inc. Key No's. 29, 30, 31 & 32)	1
35	354 693	129968112	LH side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
36	354 693	129968114	RH side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
38	354 617	129958116	Jacket Top Panel (white stove enamel)	1
39	354 606	129928122	Jacket Top Panel infill piece (white stove enamel)	1
40	354 710	129968118	Jacket Front Panel (white stove enamel) with instruction plate and nameplate	1

E Type CF 80 (4 Section)
Conventional Flue Multi Gas Boiler
Ideal-Standard
41-399-66



Key Number	British Gas Part Number	Maker's Part Number	Description	Quantity
11	319 926	129818033	Sightglass and gasket (1.5 millboard)	1
12		129818035	Sightglass Frame with sightglass and gasket with 2-M5 wing nut	1
14	399 320	129818040	Multigas Burner (Bray Cat. 3108 AB 14037) (with anti-flashover shield) with 1-M5 washer form A 1-M5 hex. nut	3
15	398 073	129003612	Burner Injector (Town's Gas) (Bray Cat. 10 size 2800)	3
16	398 322	169120451	Burner Injector (Natural Gas) (Bray Cat. 16 size 900)	3
17	399 923	129988090	Burner Manifold (Bray Cat. 3400 AB 14014) burner baffle (aludip) and 1/8" BSP test nipple with 3-M6 x 10 pozi pan screw	1
19	392 559	586522000	3/4" BSP Combination gas valve (Honeywell V8800 A-1006)	1
21	391 573	586861602	Pilot Burner (Honeywell Q.314 A5039 with Town's Gas injector (CAR 22) 2-M5 x 6 lg. pozi pan screws	1
22	391 572	586861609	Pilot Burner (Honeywell Q.314 A5039 with natural gas injector (BCR 18) 2-M5 x 6 lg. pozi pan screws	1
25	390 131	586811710	Thermocouple (Honeywell Q.309 A 1202)	1
29	382 214	586811511	Thermostat (Ranco C26-527)	1
30	354 379	586811517	Thermostat Knob	1
32	319 924	586811800	1 Amp Fuse (glass cartridge) 1/2" dia. x 1 1/2"	1
33	354 689	586811260	Control Box complete (inc. Key No's, 29, 30, 31 & 32	1
35	354 693	129968112	LH side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
36	354 694	129968114	RH side Jacket Panel (white stove enamel) with tie piece bracket and 2-cable clip	1
38	354 617	129958116	Jacket Top Panel (white stove enamel)	1
39	354 606	129928122	Jacket Top Panel infill piece (white stove enamel)	1
40	354 710	129968118	Jacket Front Panel (white stove enamel) with instruction plate and nameplate	1

E Type CF 105 (5 Section)
Conventional Flue Multi Gas Boiler
Ideal-Standard
41-399-91



Key Number	British Gas Part Number	Maker's Part Number	Description	Quantity
14	399 928	129818040	Multigas Burner Bar Bray Cat. 3108 AB 14037 with 1-M5 hex. nut, 1-M5 washer form A	4
15A	398 071	129003620	Burner Injector TG (Bray Cat. 10 size 2900)	4
16	398 316	169110437	Burner Injector NG (Bray Cat. 16 size 800)	4
17	399 922	129958090	Burner Manifold Bray Cat. 3400 AB 14016 with 1-burner baffle (aludip), 3-M6 x 12 pozi pan screw	1
11	354 566	129818033	Sightglass and gasket (1.5 millboard)	1
12	354 567	129818035	Sightglass frame with sightglass and gasket with 2-M5 x 20 stud, 2-M5 wing nut	1
19A	392 608	586522010	Honeywell ICGC V8800C 1028 1/2 in. BSP 24v step opening multifunctional gas valve	1
25	390 131	586811710	Thermocouple (Honeywell Q 309 A 1202)	1
22	390 427	586861609	Pilot Burner (Honeywell Q 314 A 5039) with 1-NG Injector BCR 18, 1-pilot/thermocouple gasket (1.5 millboard), 2-M5 x 12 pozi pan screw	1
24	390 794	569120258	Pilot Burner Injector NG BCR 18	1
21	390 426	586861602	Pilot Burner (Honeywell Q 314 A 4636) with 1-TG Injector CAR 22, 1-pilot/thermocouple gasket (1.5 millboard), 2-M5 x 12 pozi pan screw	1
23	390 793	129004022	Pilot Burner Injector TG CAR 22	1
29	382 214	586811511	Thermostat (Ranco C26-527)	1
30	354 379	586811517	Thermostat Knob	1
32	319 924	586811800	1 Amp Fuse (glass cartridge 1/2 in. x 1 1/2 in.)	1
33A	354 689	586811260	Control Box Complete	1
34B	354 693	129968112	LH side Jacket Panel (white stove enamel) with tie piece bracket, 2 cable clips and front panel locating bush	1
35B	354 694	129968114	RH side Jacket Panel (white stove enamel) with tie piece bracket, 2 cable clips and front panel locating bush	1
39A	354 710	129968118	Jacket Front Panel (white stove enamel) with instruction plate and nameplate	1
37A	354 617	129958116	Jacket Top Panel (white stove enamel)	1
38	354 606	129928122	Jacket Top Panel infill piece (white stove enamel)	1

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 IDEAL
STANDARD

Ideal-Standard E Type CF gas boilers Servicing instructions

SfB (56)

UDC 697.326

June 1975

These instructions supersede all previous servicing instructions issued for these appliances.

GENERAL DATA

TABLE 1

Boiler Size	CF 35	CF 50	CF 60	CF 80	CF 105
No. of Main Burner Bars (Bray Cat.3108 AB 14037)	1	2	2	3	4
Main Burner Injector(s) Town Gas Groups 4 & 5 Bray Cat.10	1 x size 3800	2 x size 3000	2 x size 3400	3 x size 2800	4 x size 2900
Natural Gas Bray Cat.16	1 x size 1200	2 x size 900	2 x size 1000	3 x size 900	4 x size 800
Honeywell Pilot Injector Town Gas Group 4 & 5 Natural Gas	CAR 22 BCR 18	CAR 22 BCR 18	CAR 22 BCR 18	CAR 22 BCR 18	CAR 22 BCR 18
Flue Outlet size	102 mm (4")	102 mm (4")	102 mm (4")	127 mm (5")	127 mm (5")
Gas Supply Connection	1/2" BSP	1/2" BSP	1/2" BSP	3/4" BSP	1" BSP
Flow Connections	1" BSP	1" BSP	1" BSP	1" BSP	1 1/4" BSP
Return Connection (Pump)	1/2" BSP	1/2" BSP	1/2" BSP	3/4" BSP	1" BSP
Return Connections (Gravity)+	1" BSP	1" BSP	1" BSP	1" BSP	1 1/2" BSP
Maximum Static Water Head	36.6 m (120')	36.6 m (120')	36.6 m (120')	36.6 m (120')	36.6 m (120')
Weight (Standard Model)	95 kg (209 lb)	127 kg (281 lb)	127 kg (281 lb)	161 kg (355 lb)	197 kg (435 lb)
Weight (with S.8. Kit)	105 kg (231 lb)	137 kg (303 lb)	137 kg (303 lb)	171 kg (377 lb)	-
Electricity Supply	200/250 volts AC single phase 50 Hz				
External Fuse Rating	3 amps	3 amps	3 amps	3 amps	3 amps
Water Content	8.6 litres (1.9 gall)	13.4 litres (3.0 gall)	13.4 litres (3.0 gall)	18.2 litres (4.0 gall)	22.7 litres (5 gall)
Gas Council Appliance Number	41 399 55	41 399 56	41 399 57	41 399 66	41 399 91

+ These return tapings are for connection to gravity circuits only; in no circumstances should they be connected to a pumped circuit.

MAINTENANCE

WARNING

1. Always switch off and disconnect the electricity supply and close the main gas cock before carrying out maintenance work on the boiler.

2. Never attempt to light the boiler unless the main gas cock has been turned off for at least three minutes and always then follow the "Initial Lighting" procedure.

General

Full maintenance on the boiler should be undertaken not less than once per year. The user is recommended to take out a contract with the local Gas Board or a Heating Engineer for this work to be done.

Burner Assembly

Remove the front panel of the cabinet. Unscrew the union nut at the main gas cock and remove the two screws and two wing-nuts securing the front burner

plate. Disconnect the gas control leads from the gas control. Remove the complete burner bar assembly from the boiler.

Main Burners and Pilot Burner (Figure 1)

Inspect the main burner bars. Brush the top of the bars to dislodge any debris which may have accumulated. Use a hard brush with stiff bristles. Metallic bristle brushes must NOT be used as damage to the flame ports could occur. Examine the injector(s); if damaged or deteriorated replace with new ones of the correct size as listed in Table 1.

The injector(s) screw(s) into the manifold and can be removed and replaced without disturbing the burner bar(s), but the bar(s) may be removed to give easier access if desired (see under "Replacement of Faulty Burner Bar" page 2).

Inspect the pilot burner and thermocouple; make sure that they are

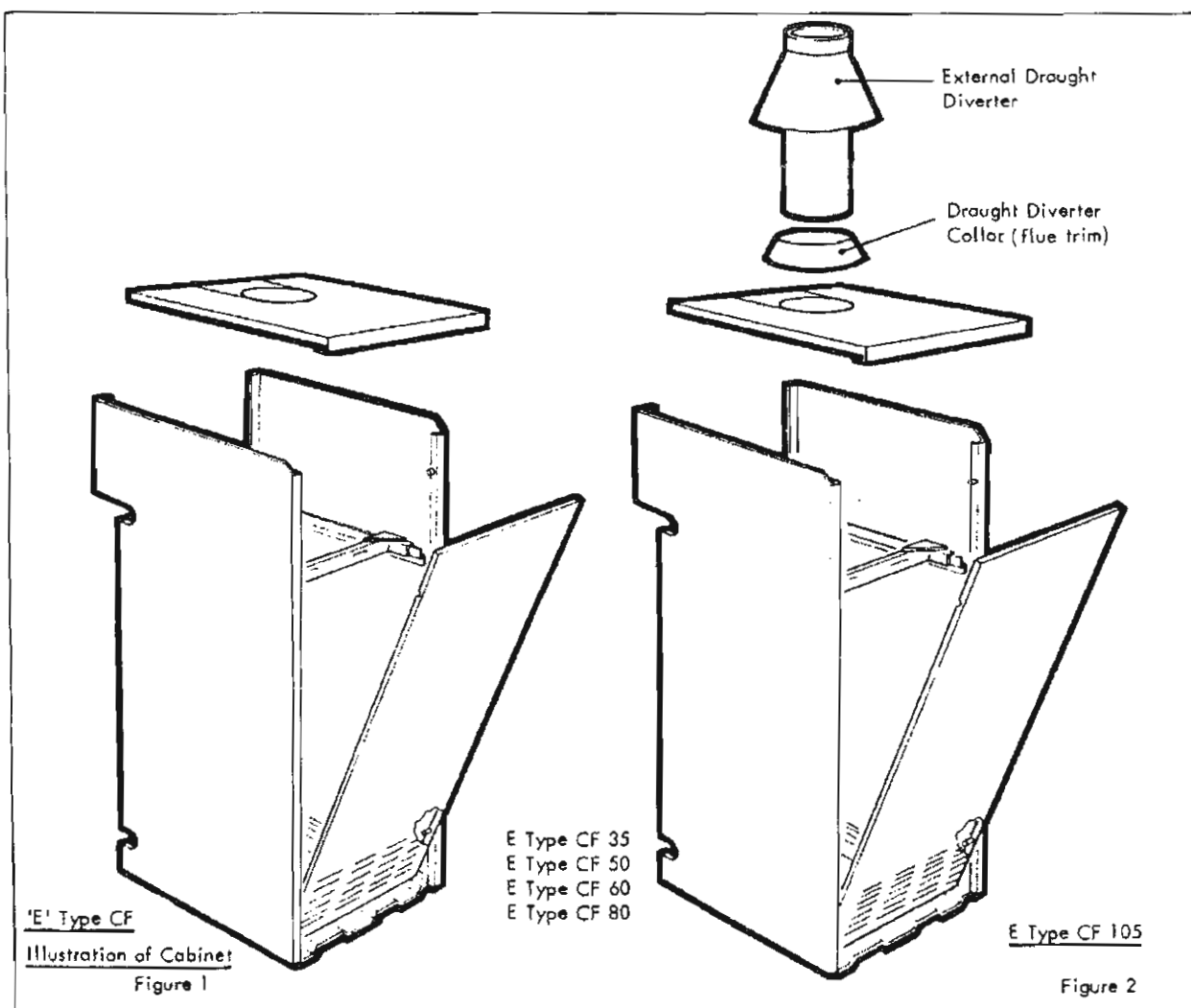
clean and in good condition. In particular check that:-

1. The pilot burner is firmly secured to the front plate.
2. The pilot shield is clean and un-obstructed.
3. The thermocouple terminal nut at the gas control is secure but not over-tightened. The terminal must be clean to ensure a good electrical connection.
4. The pilot observation window is clean and undamaged.

Flueways

Having removed the burner assembly, remove the flue clean-out cover plate on top of the boiler body and clean the heat exchanger flueways with a flexible brush.

Check that the heat exchanger flueways are quite clean and that all loose deposits are brushed away. After doing so, remove all loose debris from the floor



'E' Type CF

Illustration of Cabinet

Figure 1

E Type CF 35
E Type CF 50
E Type CF 60
E Type CF 80

E Type CF 105

Figure 2

Two models of the 35, 50, 60 and 80 size boilers, Standard and SB, are available. All boilers are supplied assembled in standard form and are despatched in one large carton containing the assembled boiler and cabinet. For 105 size models, an additional package is supplied containing the external draught diverter and collar used only with that model. When the SB model is ordered (35, 50, 60 and 80 size boilers only), an easily fitted SB Conversion Set is shipped with the boiler in an additional package containing pump, isolating valves and associated pipework. SB Conversion Sets are not available for the 105 size model.

Cabinet Design (Figures 1 and 2)

The cabinet design and measurements are the same for all model sizes, but the 105 size boiler only has an external

draught diverter mounted on top of the cabinet (the smaller sizes have internal draught diverters).

Removal of the cabinet front and top panels gives ready access to the gas controls, flue cleanout cover and, in the case of SB models, to the pump and isolating valves.

Location of Boiler

The following criteria must be satisfied by the chosen position:-

1. Allow adequate space around the appliance for maintenance (i.e. removal of jacket door and burner assembly and use of a flue brush).
2. The boilers have a water-cooled base and no special insulation of the floor is necessary other than that required by the Local Authority and The Building Regulations. The floor should, of course,

be level and of adequate load-bearing capacity.

3. An adequate supply of fresh air for combustion and ventilation must be available to ensure safe and efficient operation of the boiler. Where the appliance is installed in a room, purpose-designed ventilation must be provided in an outside wall of the building. The opening may be either (a) directly into the room containing the appliance or (b) into an adjacent room or space which has an internal purpose-provided opening to the room containing the appliance. The minimum effective areas of all purpose-designed ventilation openings must be 550 mm² per kW (1 sq. inch per 4000 Btu/h) of maximum output of the appliance, viz:-

3	CF 35	5700 mm ² (9 in ²)
	50	8400 mm ² (13 in ²)
	60	9800 mm ² (15 in ²)
	80	13000 mm ² (20 in ²)
	105	17000 mm ² (25½ in ²)

Where the appliance is installed in a compartment (e.g. cupboard), whether modified or specially built, the space should meet the following requirements:-

(a) Have a ½ hour fire resistance from internal fire, and the inside lining or finishing should be non-combustible or a Class 1 finish.

(b) Be of sufficient size to permit access for inspection and servicing. However, it should not be made larger than necessary, to avoid the use of the compartment as a general storage cupboard. The door must be of sufficient size to permit the removal of the appliance.

(c) Be fitted with permanent openings for air for combustion and compartment ventilation at high and low level.

When the openings from the compartment communicate directly with the outside of the building, the free areas provided must be at the rate of 550 mm² per kW (1 sq. inch per 4000 Btu/h) at high level and 1100 mm² per kW (2 sq. inch per 4000 Btu/h) at low level of the maximum rated output of the appliance viz:-

(At High Level)	
CF 35	5700 mm ² (9 in ²)
50	8400 mm ² (13 in ²)
60	9800 mm ² (15 in ²)
80	13000 mm ² (20 in ²)
105	17000 mm ² (25½ in ²)

(At Low Level)	
CF 35	11400 mm ² (18 in ²)
50	16800 mm ² (26 in ²)
60	19600 mm ² (30 in ²)
80	26000 mm ² (40 in ²)
105	34000 mm ² (51 in ²)

When, however, the openings in the compartment communicate with a room, the areas at high and low levels must be DOUBLED and the room must also be provided with purpose designed ventilation to the external air having a free area of 550 mm² per kW (1 sq. inch per 4000 Btu/h) of maximum output of the appliance. All ventilation grilles must be so sited that accidental obstruction will not occur.

IMPORTANT - EXTRACTOR FANS

The use of an extractor fan in the same room as this appliance (or in an adjacent room used for through ventilation) can in certain cases adversely affect safe operation. Where a fan is, or is subsequently, installed in such a room the advice of the local Gas Board should be obtained before proceeding.

4. Installation Adjacent to Fixtures (see Figs. 3 and 3A).

(1) All models may be fitted up to the

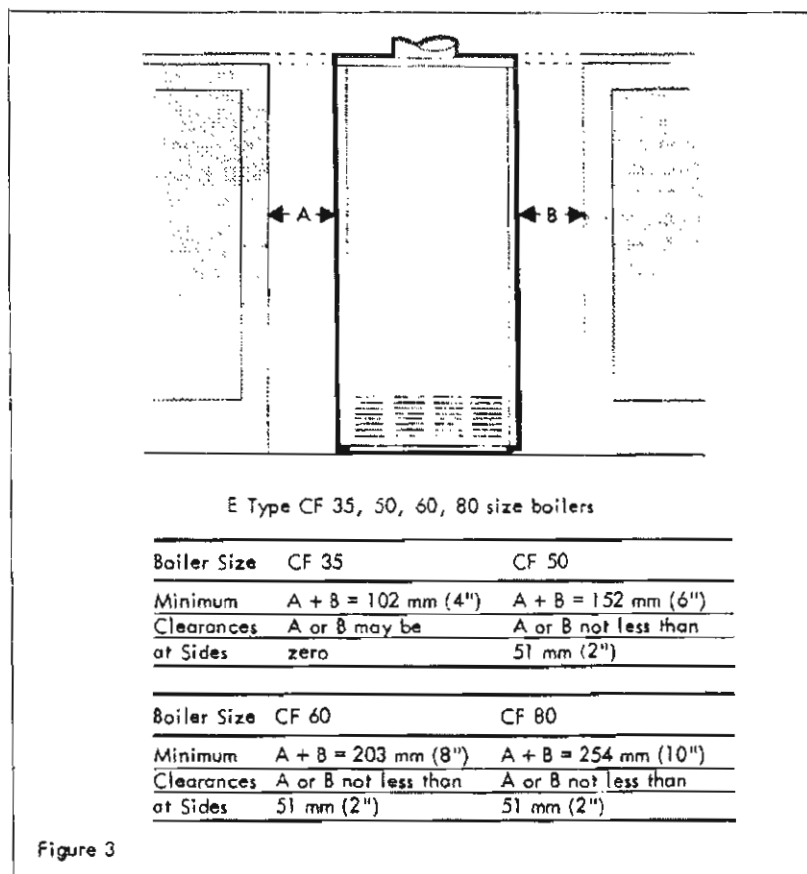


Figure 3

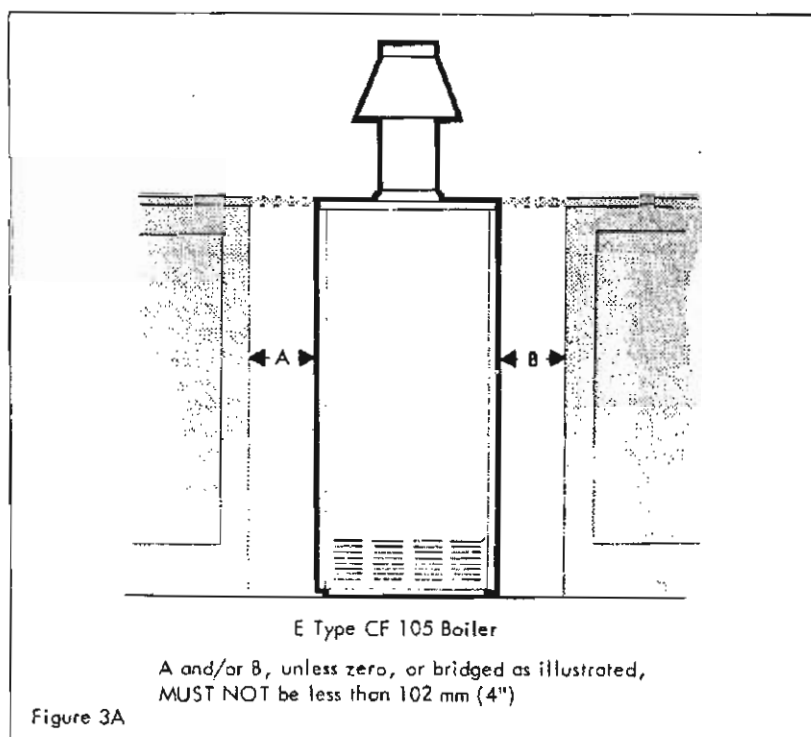


Figure 3A

wall at the rear of the cabinet.

(2) Models 35, 50, 60 and 80

To ensure correct operation of the diverter, clearances between the cabinet and adjacent fixtures at the sides MUST comply with the requirements shown in Fig.3. The space between the cabinet sides and fixtures may be bridged if desired AT CABINET TOP LEVEL as shown in Fig.3.

(3) Model 105

To ensure correct operation of the diverter, clearances between the cabinet and adjacent fixtures at the sides MUST

comply with the following requirements:-

(1) Fixtures may be built up to the cabinet sides (i.e. zero gap).

(2) Spaces of any dimension between the cabinet sides and fixtures may be bridged at CABINET TOP LEVEL as illustrated in Fig. 3A.

(3) If spaces are not bridged the widths MUST comply with the requirements shown in Figure 3A.

5. The louvres at the bottom of the front panel of the cabinet must never be obstructed.

6. The chosen location should facilitate

flow and return water connections and the flue connection. The flue connection to the appliance outlet must be vertical for at least 610 mm (2 feet) with an additional 305 mm (1 foot) of vertical height for every 90° elbow or 152 mm (6") for every 135° bend fitted in the flue. The flue must have a nominal size equal to that of the appliance flue outlet. If a brick flue be used, it must be lined with a suitable corrosion resistant material. As far as is practicable, the flue run should be inside the building. External flues, if unavoidable, must be adequately insulated to guard against condensation. Horizontal flue runs should be avoided wherever possible and in any case should not exceed 1220 mm (4 feet) in length. The flue should be fitted with a Gas Council approved terminal.

IMPORTANT. WHEN INSTALLING 105 SIZE BOILERS, THE EXTERNAL DRAUGHT DIVERTER AND COLLAR (see Figure 2) MUST NEVER BE OMITTED.

INSTALLATION

For safety use a competent installer to fit this appliance, e.g. CORGI (the Confederation for the Registration of Gas Installers) requires its registered installers (identified by Ⓒ) to work to satisfactory standards.

The appliance must be installed in accordance with British Codes of Practice 332 Pt.2, 337 and 3006 Pt.2, the Building Regulations, the requirements of the Local Authority and the local Gas Region and the current Regulations of the Institution of Electrical Engineers. Carefully remove the carton and position the boiler at the chosen location.

Water Connections (Figures 4 & 5)

It is recommended that union connections be fitted outside the cabinet. Bushing down to a smaller size of pipe on the flow should be done in the vertical. The boilers are suitable for indirect systems only.

Water connections should be made as follows:

The heating return if using a pump, **MUST ONLY** be made to the 3" elbow at the rear left-hand side of the boiler, or to the 1" elbow for 105 boilers. The elbow may be turned through 180° to make a right-hand side connection.

A gravity domestic hot water return may be made to either the left or right-hand side 1" tapping (1½" for 105 boilers) near the base of the boiler. Pumped returns **must not** be connected to these side tappings.

The heating and domestic hot water flow connections should be made one to each of the 1" tappings (1½" for 105 boilers) near the top of the boiler.

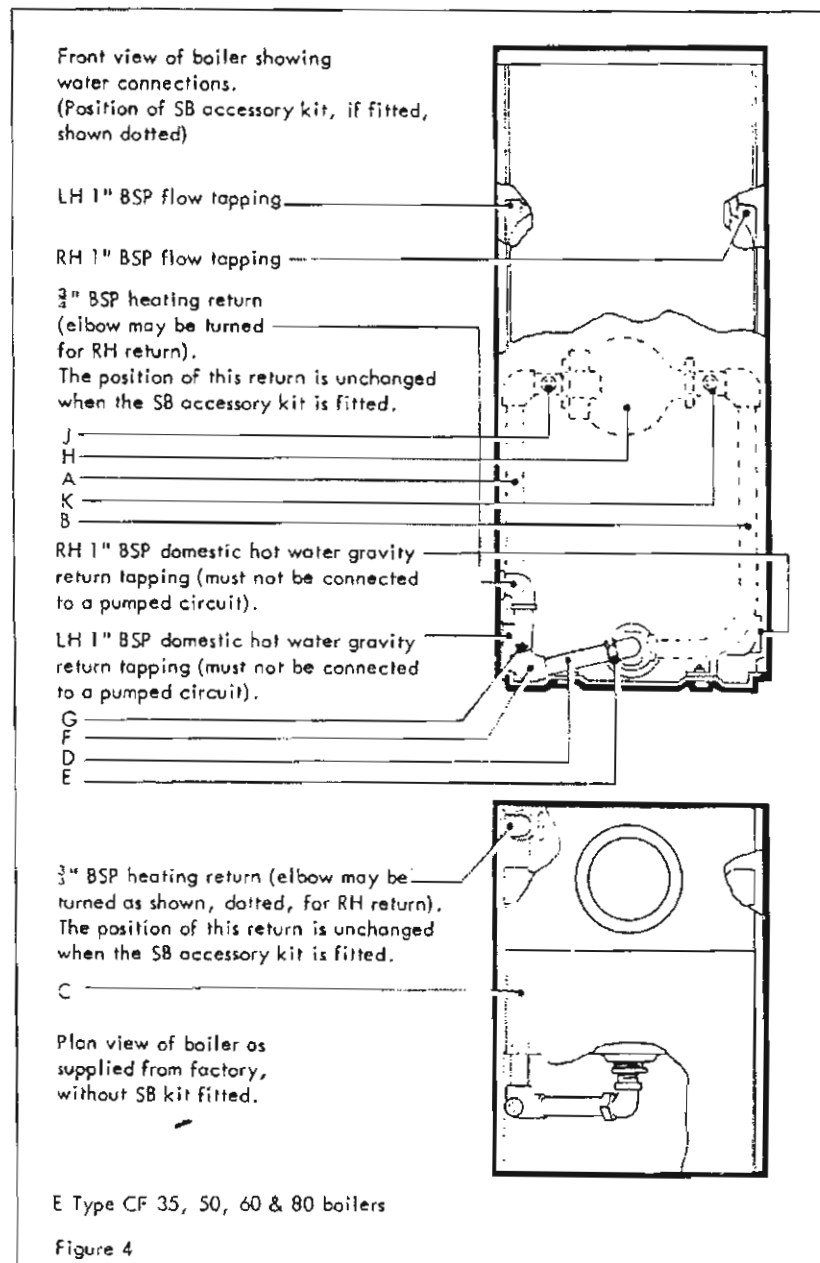
NOTE: The boiler is suitable for use with a maximum static head of 36.6 m (120 feet) or 3.6 bar (52 psi) in accordance with BS.779. The SB model (available in sizes 35, 50, 60 and 80 only) is provided with a separate package containing the pump, isolating valves and pipework which should be fitted as shown (Fig.4). The pump is provided with an output regulator enabling the delivery to be adjusted to match the actual frictional head of the installation. Reference

should be made to the graph illustrated herewith (Fig.6) and the regulator set accordingly. The adjusting dial is located on the right-hand (as installed) side of the pump body. Adjustment is made by turning the dial to the required number; a slot is provided to take a suitable coin or screwdriver. A "click" will be observed as each setting is obtained. Do not attempt to rotate the dial beyond the marked maximum and minimum positions. **THE MAINS SUPPLY SHOULD BE SWITCHED OFF WHEN ADJUSTING THE SETTING.** If due to initial inertia, the pump does not start when adjusted to a low setting, change the setting to 4 to obtain maximum torque and, after the pump has started, adjust to the required lower setting. The pump is provided with air vents. Fig.5 shows the positions of the tappings on the 105 size boiler.

Fitting SB Conversion Kit (Figure 4) (applies to 35, 50, 60 and 80 models ONLY)

Warning: The SB conversion kit must be fitted before installing the boiler.

1. Remove the cabinet door.
2. Disconnect union elbow (E) at the bottom centre-tapping of the boiler, and draw the water pipe assembly forward.
3. Disconnect pipe (D) from the three-way elbow and, having removed the half union elbow, discard pipe (D).
4. Fit the half union elbow (removed from pipe) to the short leg of pipe (B) using suitable jointing compound and remake the union at bottom centre tapping of boiler with pipe (B) positioned as shown.
5. Remove the plug (G) from three-way elbow (F) and using suitable jointing compound fit pipe (A) in position shown. Plug the redundant tapping in the three-way elbow (F) using plug (G).
6. Screw the external threads of the two isolating valves (J & K) into the internal threads of the elbows on pipes (A) and (B). Tighten with the valve spindles facing the front of the cabinet.
7. Place a gasket on the face of each union. Position pump between isolating valves (J) & (K) WITH THE ARROW ON PUMP BODY POINTING TOWARDS VALVE (K) and tighten up the union nuts.



- 5 8. Check that the pump does not touch the cabinet door. The pump may be moved back by slightly tightening pipe (A) and inclining pipe (B).
9. Wire the pump lead to the pump (see instructions packed with pump). The free end of the pump lead should now be wired to the control box terminal strip as shown in the wiring diagram for the system being installed. Fasten the pump lead under the cable clip provided on the front return edge of the left-hand cabinet side panel. Keep the lead clear of hot surfaces.
10. Check that the two isolating valves are fully open (turned fully anti-clockwise approximately six complete turns from the fully closed position).
11. Replace front panel. The boiler is now ready for installation.

ELECTRICAL CONNECTIONS (Figure 7 shows the internal wiring of the Control Box).

IMPORTANT - The appliance **MUST BE EARTHED**. The earthing terminals on boiler sections and control box are earth bonded at Works to terminal 2 of the control box. If for any reason these earth bonding wires are removed when installing the boiler, the earth bonding

MUST BE REPLACED before switching on the electricity. All electrical leads to the control box terminals must be protected by using the plastic sleeves provided, anchored under the control box cable clamps. The boiler requires a 200/250 volts 50 Hz. AC supply fused at 3 amps and the connection should be made to an adjacent three-pin socket outlet. (If a direct mains connection be made without a plug and socket, then a double pole isolating switch must be incorporated in the mains supply). All wiring should conform to the rules of the Institution of Electrical Engineers. Wiring within the cabinet should be neatly secured under the cable clips provided on the cabinet. The clips should be located to ensure that leads cannot contact the burner front plate or collector hood. Connect the mains lead to the plug as follows:-

1. BROWN lead to the LIVE (L) pin.
2. BLUE lead to the NEUTRAL (N) pin.
3. GREEN/YELLOW lead to the EARTH (E or \equiv) pin.

The remainder of the wiring will differ according to the system being installed. The wiring for systems commonly in use is illustrated overleaf.

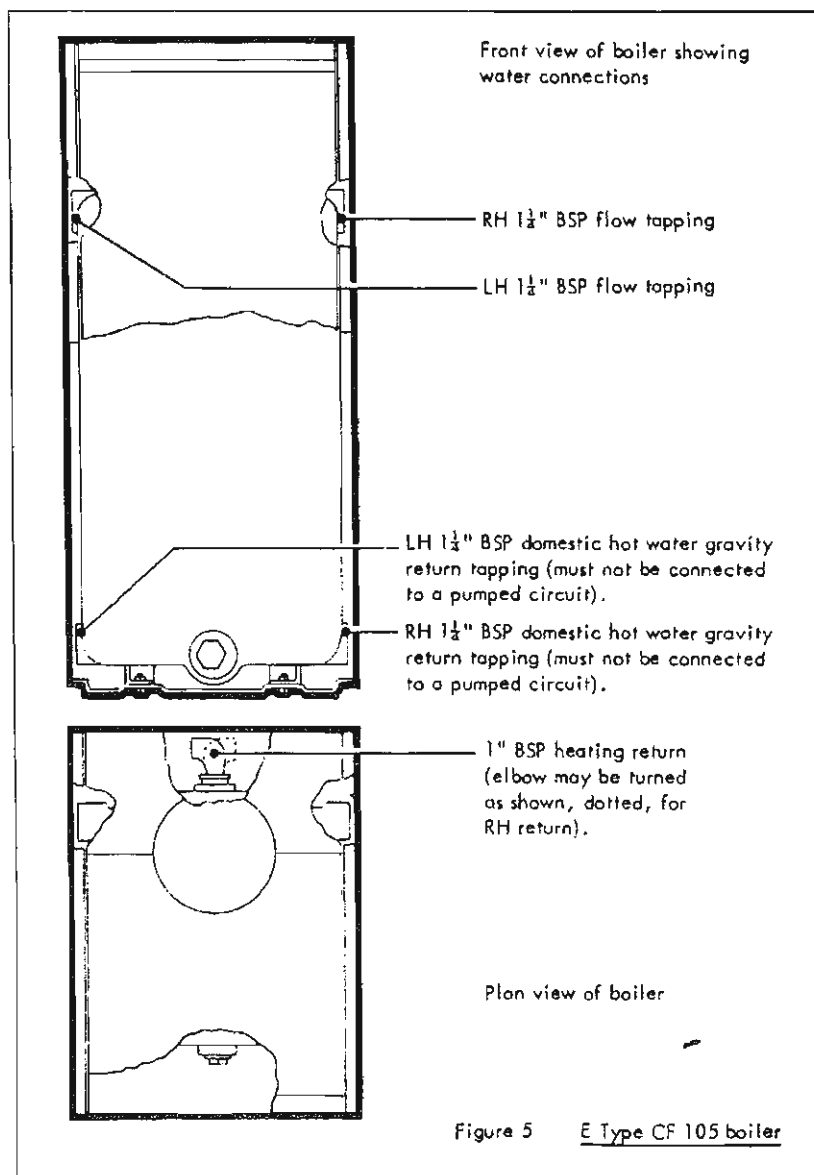


Figure 5 E Type CF 105 boiler

Figure 8. Gravity domestic hot water, pumped heating

Notes:-

- 1) If a programmer be used, as shown, it should not be capable of selecting CH without HW. The link between terminals 3 and 4 of the control box terminal strip should be carefully removed without disturbing other wiring.
- 2) If a time clock be used instead of a programmer, leave link 3-4 in place and connect the switched live feed from the time clock to terminal 3.
- 3) If no time control at all be used, connect the mains lead directly to terminals 1, 2, 3 on the terminal strip.
- 4) If a room thermostat be used, remove the link between terminals 6 and 7 of the terminal strip.

Figure 9. Pumped Primary - Diverter Valve.

Notes:-

- 1) Programmes used with this system should NOT be capable of selecting CH without HW.
- 2) When using a time clock instead of a programmer -
 - (a) For constant hot water, join cylinder stat "calling" to "permanent live".
 - (b) For timed hot water, join cylinder stat "calling" to "switched live" at time clock.
- 3) The diverter valve must be connected to the pipe-work so that the boiler feeds the HW system when the valve is not energised and the CH system when energised.

Figure 10. Pumped Primary - Zone Valves (Spring Return).

Notes:-

- 1) The valves used are of the type which are energised to open and spring-closed when the supply ceases. They should have an auxiliary switch, as shown, to energise the boiler when the valve is open.
- 2) When using a time clock instead of a programmer:-
 - (a) for constant HW, take cylinder stat supply from "permanent live" on time clock.
 - (b) for timed HW, take cylinder stat supply from "switched live" on time clock.

Figure 11. Pumped Primary - Zone Valves (Motorised both ways).

Notes:-

- 1) The valves used are of the type with separate live terminals to be energised to open and close the valve; they should have an auxiliary switch, as shown, to energise the boiler when the valve is

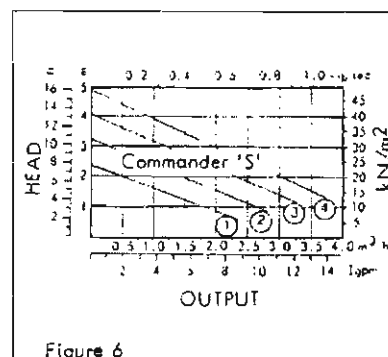


Figure 6

open.

2) When using a programmer (or time clock) with single-pole single-throw contacts, relays will be required - refer to Figure 12, "Programmer Adaptation".

Figure 12. Programmer Adaptation

Notes:-

1) This diagram shows the use of relays (240 Volts AC coil, changeover contacts rated at 1 amp) to convert a programmer (or time clock) with single-pole single-throw switching to single-pole double-throw switching, for use with valves which are "motorised both ways".

Figure 13. Frost Thermostat Wiring

Notes:-

1) When the boiler is to be turned off during frosty weather, this should be done at the programmer or time clock over-ride control, and all other switches, including the mains supply and the boiler thermostat, must be left in the normal running position.

2) The connections should be made as shown without disturbing any other wiring to the time control (except room and cylinder stat leads in diagram (d)).

Gas connection

A minimum dynamic gas pressure of 7.5 mbar (3" w.g.) for town gas or 20 mbar (8" w.g.) for natural gas must be available at the boiler inlet. The gas supply pipe within the boiler cabinet is provided with an elbow fitting towards the rear and at the lower right-hand side of the boiler. This may be reversed for L.H. connection.

Flue connection

The joint between the boiler socket

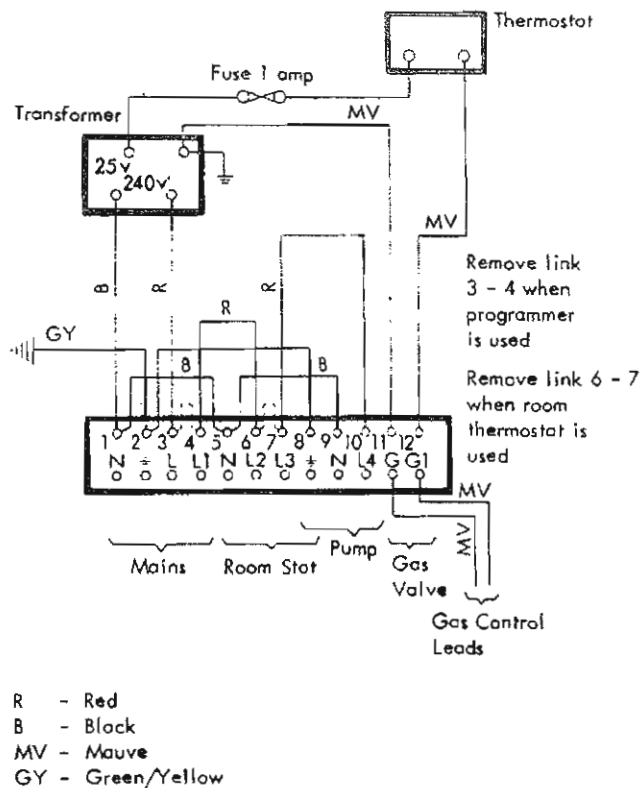
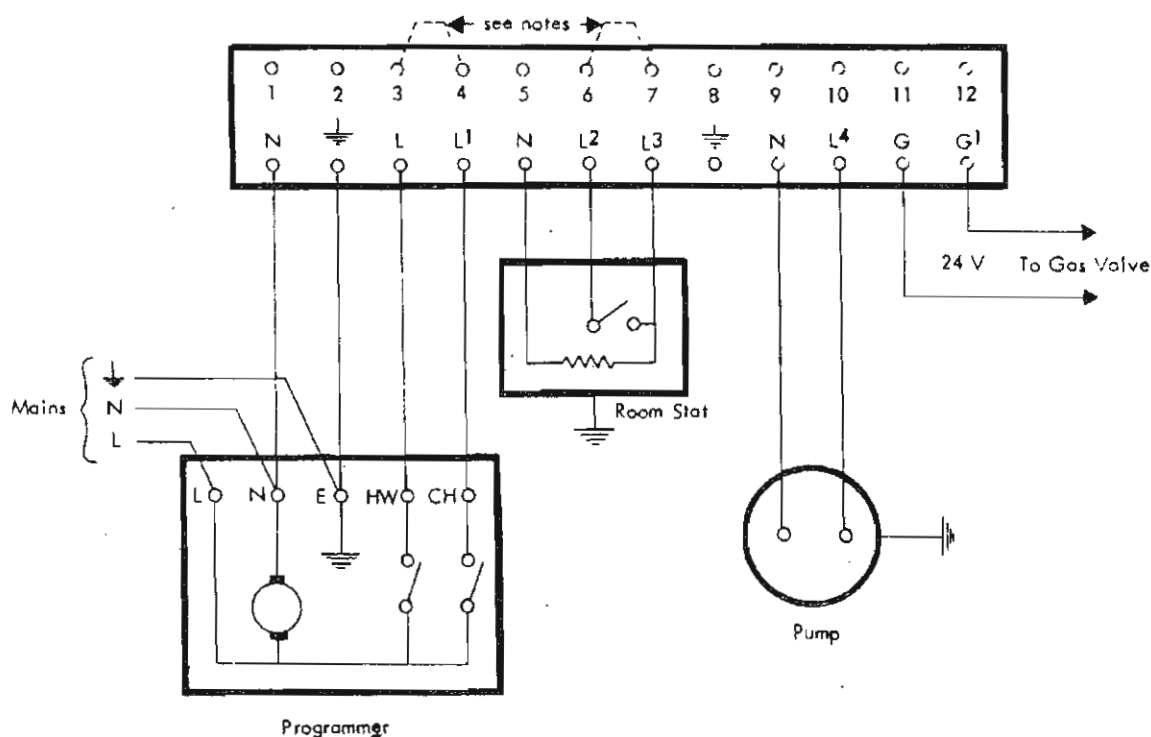


Figure 7

Boiler Control Box Terminal Strip



Gravity Domestic Hot Water, Pumped Heating

Figure 8

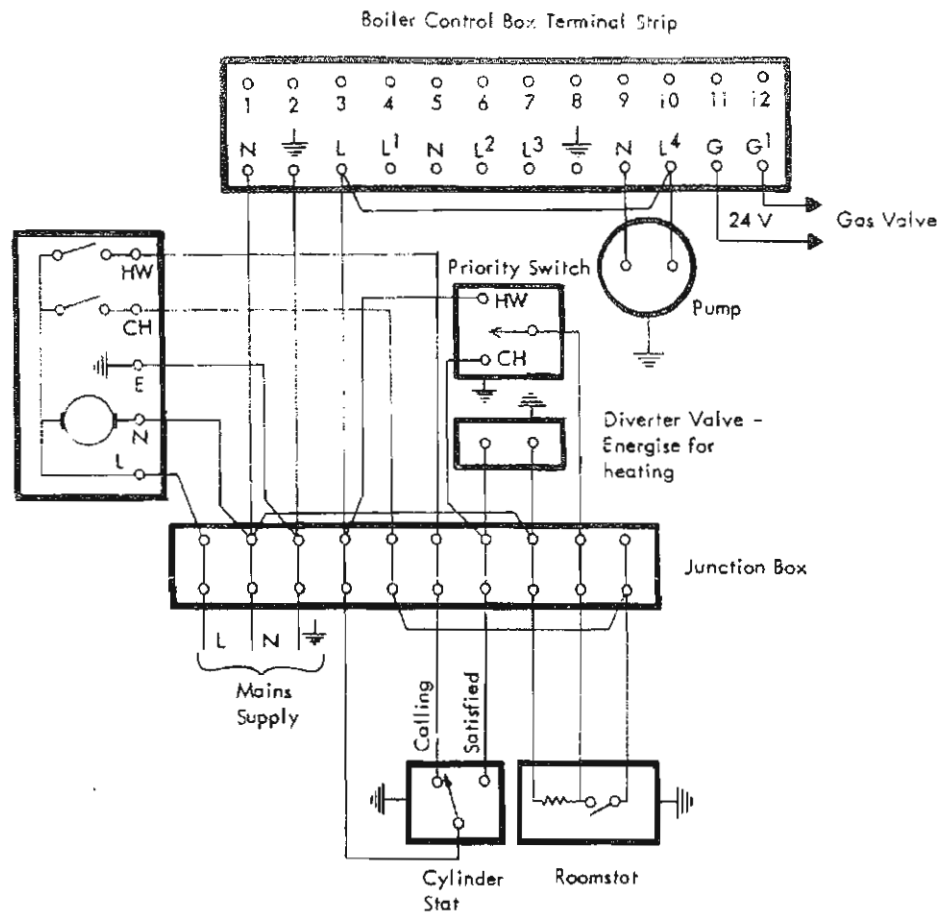


Figure 9

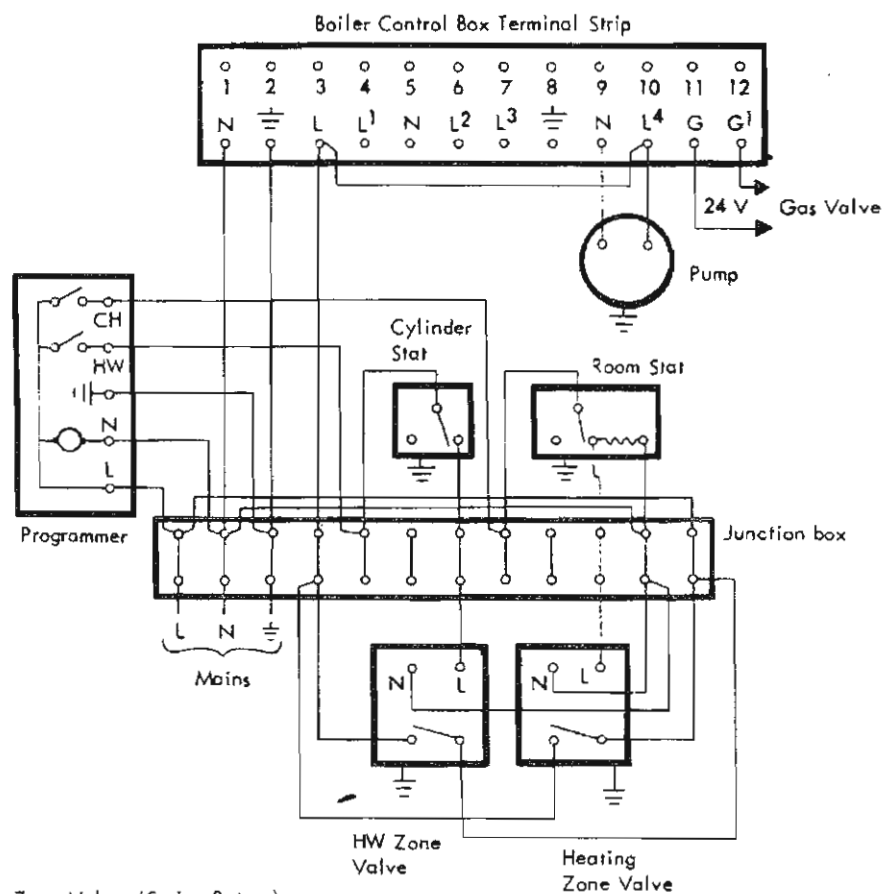


Figure 10

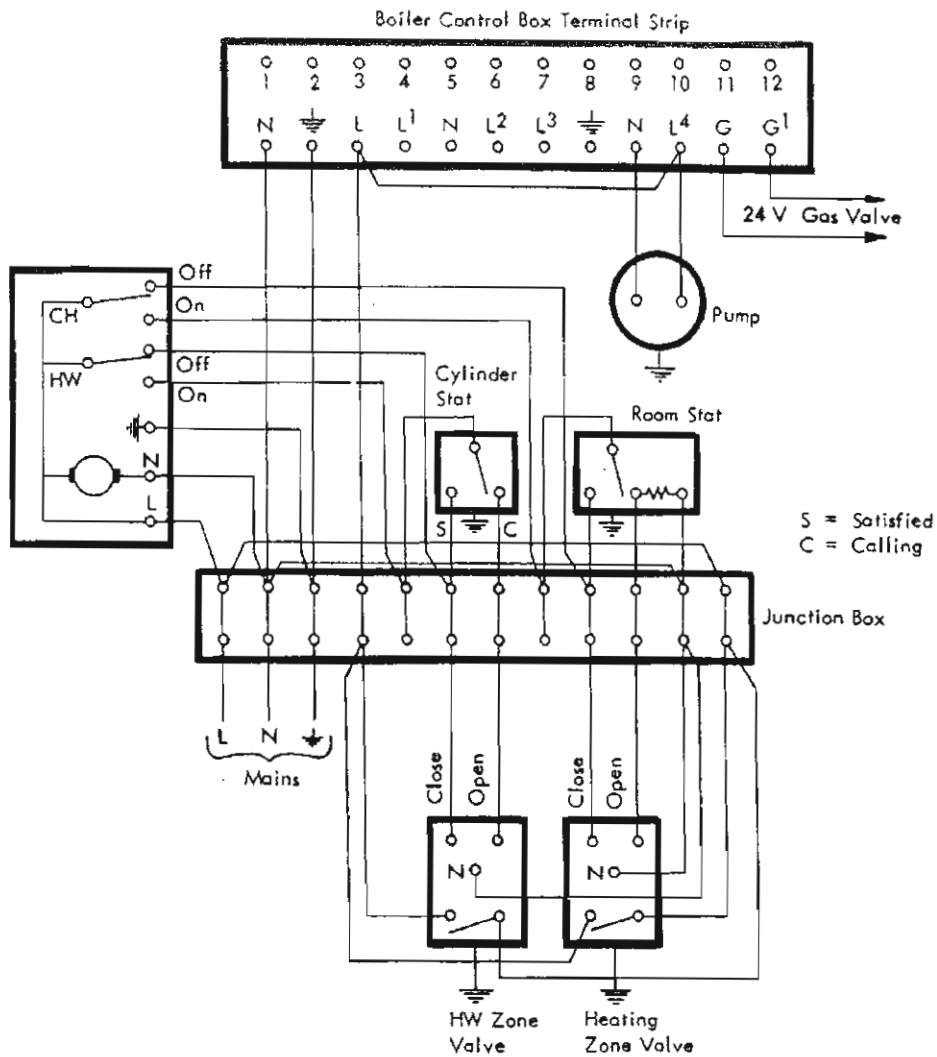
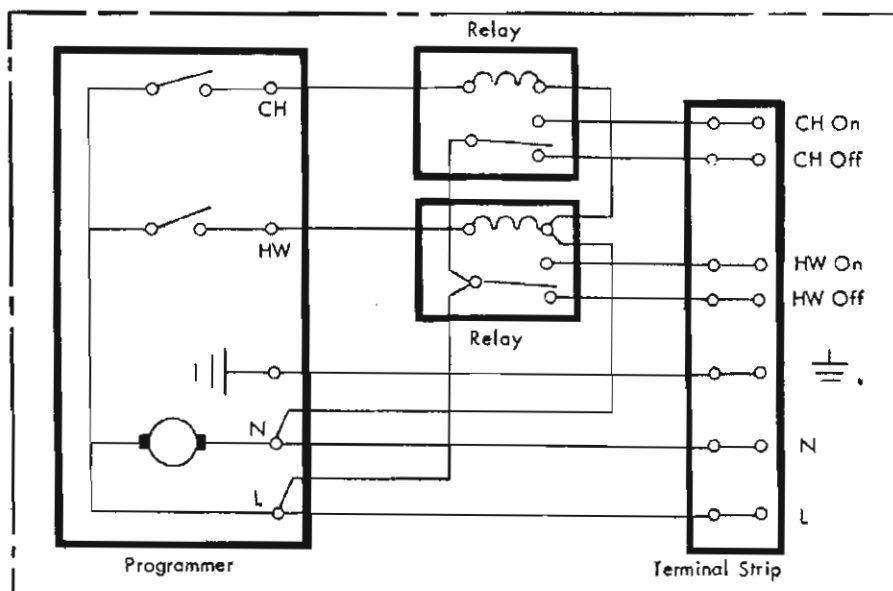
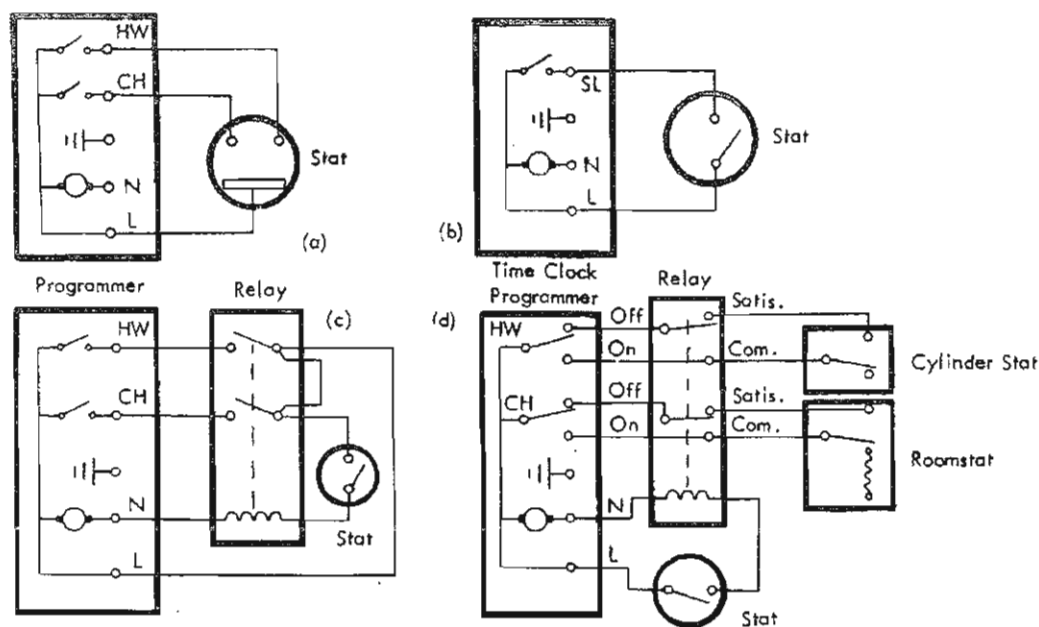


Figure 11 Pumped Primary - Zone Valves (Motor both ways)



Showing the use of two 240 VAC SPDT relays to convert a programmer with SPST switching to SPDT switching, for use with valves requiring to be energised both ways.

Figure 12 Programmer Adaptation



(a) Double Pole frost stat, wired to Programmer

(b) Single Pole frost stat, wired to Time Clock

(c) Single Pole frost stat and relay, wired to Programmer

(d) Single Pole frost stat and relay, wired to SPDT programmer (see Fig.11)

Figure 13.
Frost Thermostat Wiring

TABLE 2

Boiler	CF 35				CF 50				CF 60			
	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h
Boiler Input *	12.0	41.0	14.0	48.0	15.8	54.0	20.5	70.0	19.9	68.0	23.4	80.0
Boiler Output To Water	8.8	30	10.3	35	11.7	40.0	15.2	52.0	14.7	50.0	17.3	59.0
Manifold Pressure	mbar (gauge)	"WG	mbar (gauge)	"WG	mbar (gauge)	"WG	mbar (gauge)	"WG	mbar (gauge)	"WG	mbar (gauge)	"WG
Town Gas Group 4	3.7	1.5	5.0	2.0	2.5	1.0	3.75	1.5	3.0	1.2	4.0	1.6
Town Gas Group 5	4.5	1.8	5.7	2.3	3.0	1.2	4.5	1.8	3.5	1.4	4.75	1.9
Natural Gas	8.7	3.5	11.2	4.5	6.0	2.4	10.25	4.1	8.5	3.4	11.5	4.6

Boiler	CF 80				CF 105			
	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h	kW	1000 Btu/h
Boiler Input *	24.3	83.0	32.6	111	32.3	110	41.3	141
Boiler Output To Water	17.6	60	23.4	80	23.5	80	30.8	105
Manifold Pressure	mbar (gauge)	"WG	mbar (gauge)	"WG	mbar (gauge)	"WG	mbar (gauge)	"WG
Town Gas Group 4	2.75	1.1	4.7	1.9	2.5	1.0	4.25	1.7
Town Gas Group 5	3.2	1.3	5.5	2.2	3.0	1.2	5.0	2.0
Natural Gas	6.5	2.6	11.5	4.6	8.2	3.3	13.2	5.3

* To obtain gas consumption:-

(a) In cu. ft/h - Divide heat input (Btu/h) by C.V. of gas (Btu/cu. ft).

(b) In litres/second - Divide heat input (kW) by C.V. of gas (MJ/m³).

outlet and the flue pipe must be sealed with suitable compound.

IMPORTANT

The external draught diverter and collar supplied with 105 boilers only MUST NEVER BE OMITTED.

Gas consumption

The gas consumption should be checked on first commissioning the boiler or when it is converted to natural gas. Table 2 indicates the appropriate manifold pressures and the method of calculating the required consumption. If an adjustment is necessary, first remove the protective screw cap (see Fig. 14) on the gas control valve and then adjust the screw in or out to increase or decrease the consumption respectively. Allow the burner to warm up thoroughly before making the adjustment.

Initial Lighting Instructions

(see Fig. 15 for 35, 50, 60 and 80 size boilers; Fig. 16 for 105 size boilers)

1. When initially lighting a newly installed boiler the gas supply pipe must be purged of air. Check that the electricity supply is switched off. **OPEN ALL WINDOWS AND EXTINGUISH ANY NAKED LIGHTS IN THE ROOM. PUT OUT PIPES AND CIGARETTES.** Remove the cabinet front panel, loosen the union on the main gas cock A and purge until gas is smelled. Retighten the union and check all joints up to cock A with soap solution for leakage.
2. Check the system to ensure that drain cocks are closed and that any stop valves in the flow and return pipes are open. If not already done, fill the system, venting as necessary.
3. Turn the main gas inlet cock (A) to off (i.e. rotate fully clockwise). Turn the boiler thermostat knob (C) to "off". Press in and release the gas control button (B) marked with a RED DOT. Wait for three minutes.
4. Switch on the electricity supply to the boiler and check that all external controls fitted to the system are in the operating position. Where appropriate check that the pump is switched on. Turn on the main gas inlet cock (A) (i.e. rotate fully anti-clockwise).
5. Loosen the wing nuts (E), raise the pilot observation window (D), and insert a lighted match, positioning the flame near the pilot burner and then press down the gas control button (B) marked with a WHITE FLAME. Observe the pilot burner and continue to maintain downward pressure on button (B) for at least twenty seconds after the pilot burner has lit and is burning steadily.
6. Should the pilot go out when the button is released, push down and release the button marked with a RED DOT and then repeat the instructions in 5 above, but wait for longer than twenty seconds after the pilot burner is lit before releasing the button marked with a WHITE FLAME.

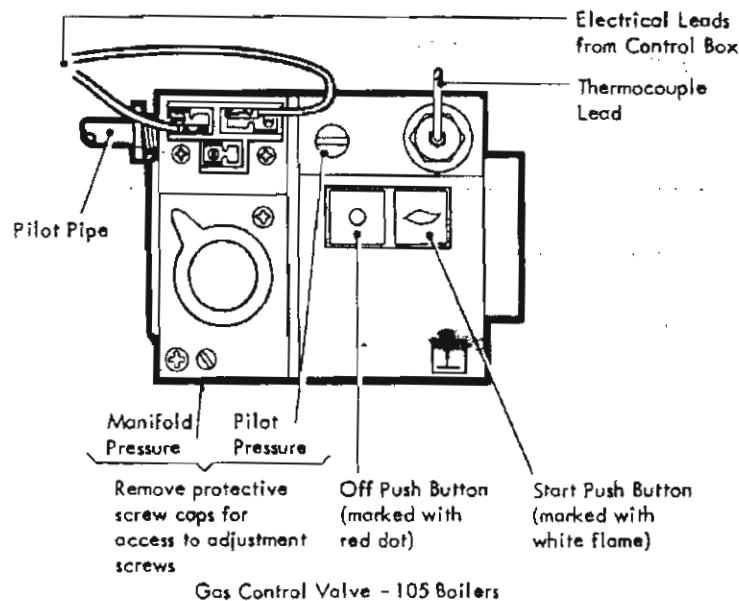
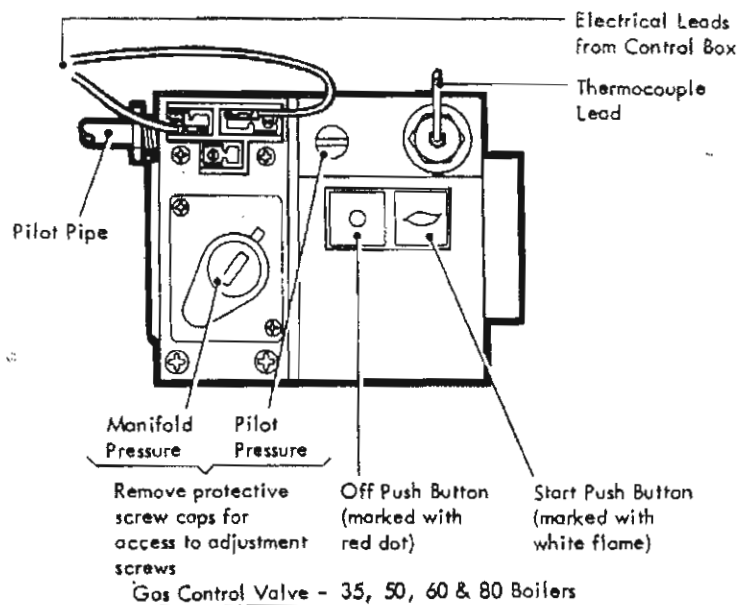


Figure 14

7. When the pilot is burning properly, replace the window (D), tighten the wing nuts (E) (take care not to over-tighten) and check the flame length, which should be 25 mm (1") approximately. If necessary, adjust the pilot gas pressure until the length of flame is correct. (See Fig. 14 for the location of the pilot pressure adjustment on the gas control valve.)

8. Turn the boiler thermostat knob to position 6; the boiler will then light. The boiler thermostat and system controls should then be adjusted to the desired settings. The table beneath gives a guide to the approximate flow temperatures corresponding to the numbers on the thermostat knob. The temperatures quoted are approximate and may vary with individual installations.

Knob Setting	Flow Temperature	
	°C	°F
1	57	135
2	63	145
3	68	155
4	74	165
5	79	175
6	85	185

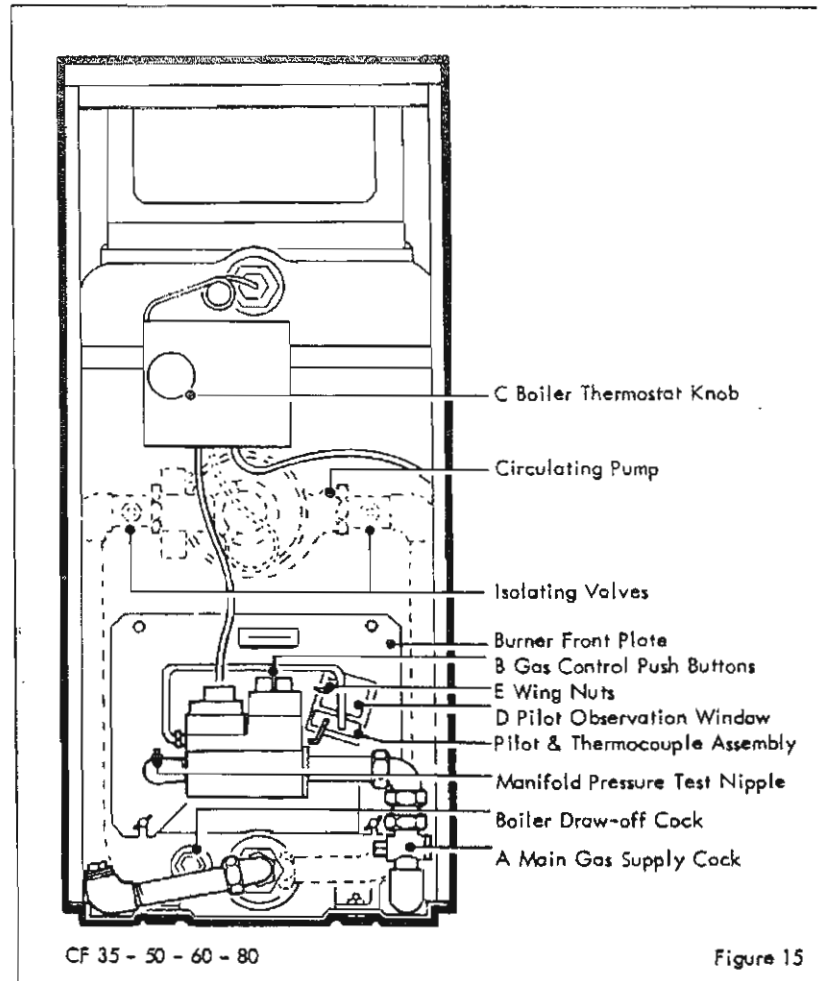


Figure 15

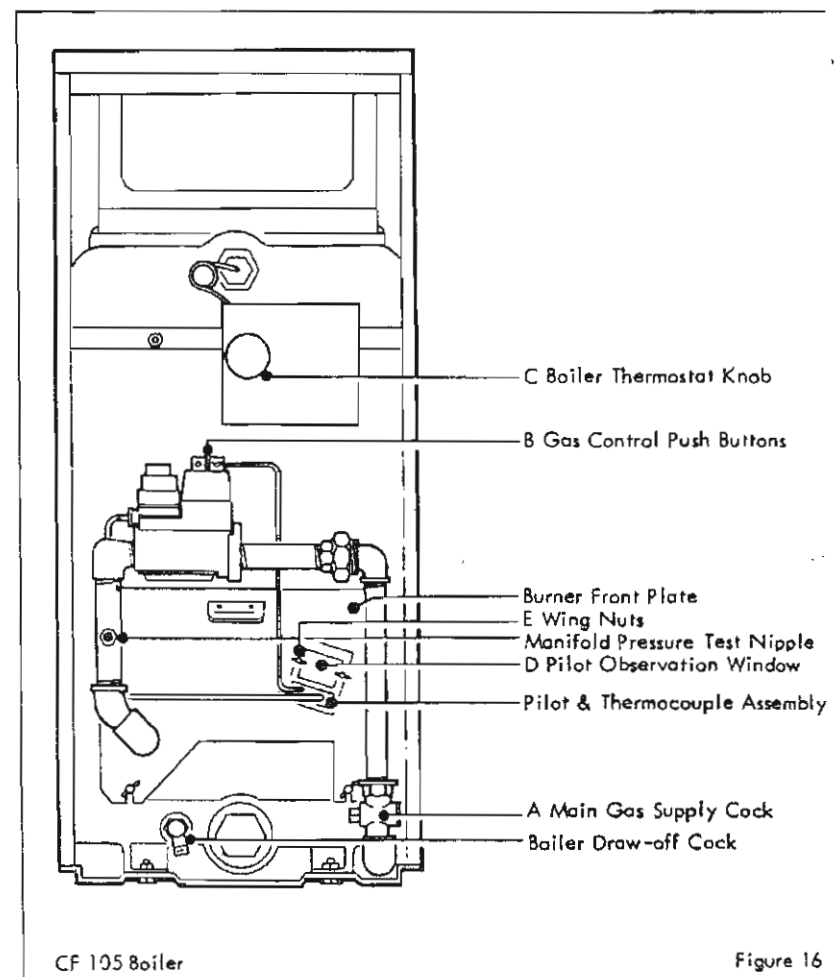


Figure 16

Ideal-Standard pursues a policy of continuing improvement and design of its products. The right is, therefore, reserved to vary specification without notice.

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SfB (56)

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IMPORTANT

If a plug is used to connect to the mains it must be of 3-pin type wired as shown in Figure 4.

THE APPLIANCE MUST BE EFFICIENTLY EARTHED.

To Light (All Boilers except 80 size)

Note: Refer to Figure 1 for 35, 50 and 60 size boilers; refer to Figure 2 for 100 size boiler.

1. Check that the main gas cock (A) is turned on (i.e. rotated fully anti-clockwise). Ensure that the boiler thermostat knob (C) is turned to "OFF" and that the gas control has been off for at least three minutes. To be certain of this, press in and release button (B) marked with a RED DOT and wait three minutes.
2. Check that the electricity supply to the boiler is turned on and that all external controls fitted to the system (e.g. room thermostat etc.) are in the "ON" position. If a pump be fitted check that it is switched on at the pump switch (E).
3. Loosen the wing nuts (F) and raise the pilot observation window (D). Insert a lighted match and position the flame near the pilot burner at the same time pressing down and maintaining pressure on the button (B) marked with a WHITE FLAME on the gas control.
4. Observe the pilot burner and continue pressing the button marked with a WHITE FLAME for at least a further twenty seconds after the pilot burner has lit and is burning steadily. Lower window (D) and retighten the wing nuts (F) (TAKE CARE NOT TO OVERTIGHTEN).
5. Should the pilot flame go out at this or any other stage, press in and release the button (B) marked with a RED DOT, wait for three minutes and then repeat the instructions in paras. 3 and 4 but wait for longer than twenty seconds before releasing the button marked with a WHITE FLAME.
6. Turn the boiler thermostat knob (C) to position 6 and the boiler will light. The boiler thermostat and system controls should then be adjusted to the desired settings. Table 1 shows the approximate flow temperatures corresponding to the numbers on the thermostat knob.

To Light (80 size Boilers)

Note: Refer to Figure 3.

1. Check that the main gas cock (A) is turned on (i.e. rotated fully anti-clockwise). Ensure that the boiler thermostat knob (C) is turned to "OFF". Push down and turn the gas control knob (B) to the off position (marked with a

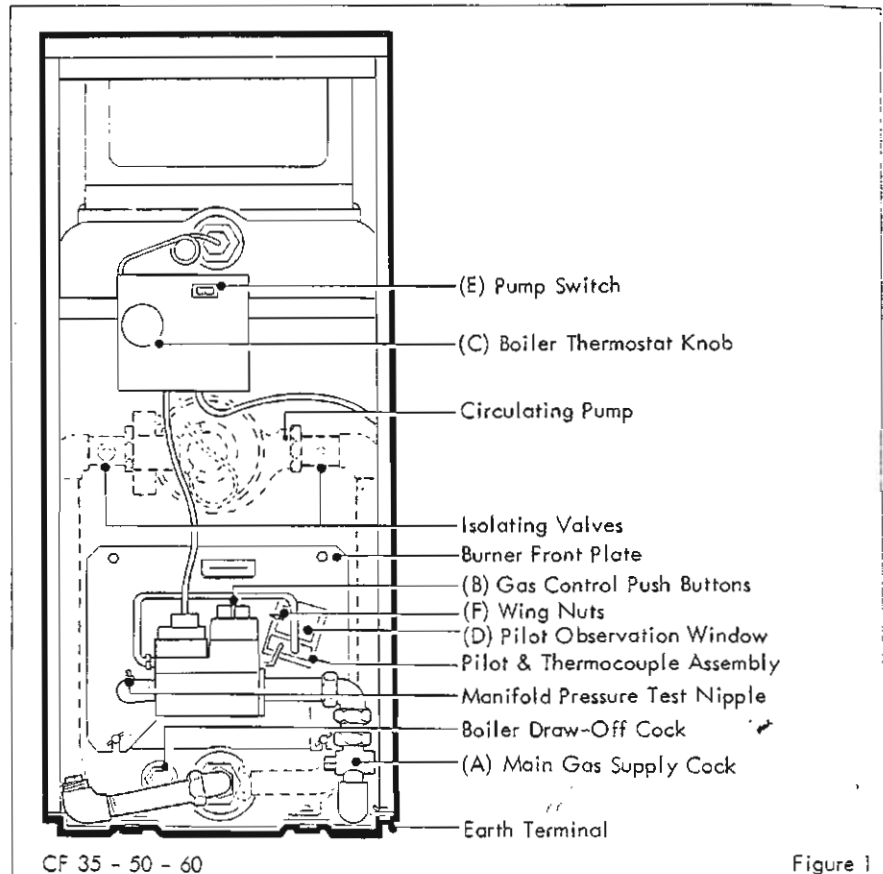


Figure 1

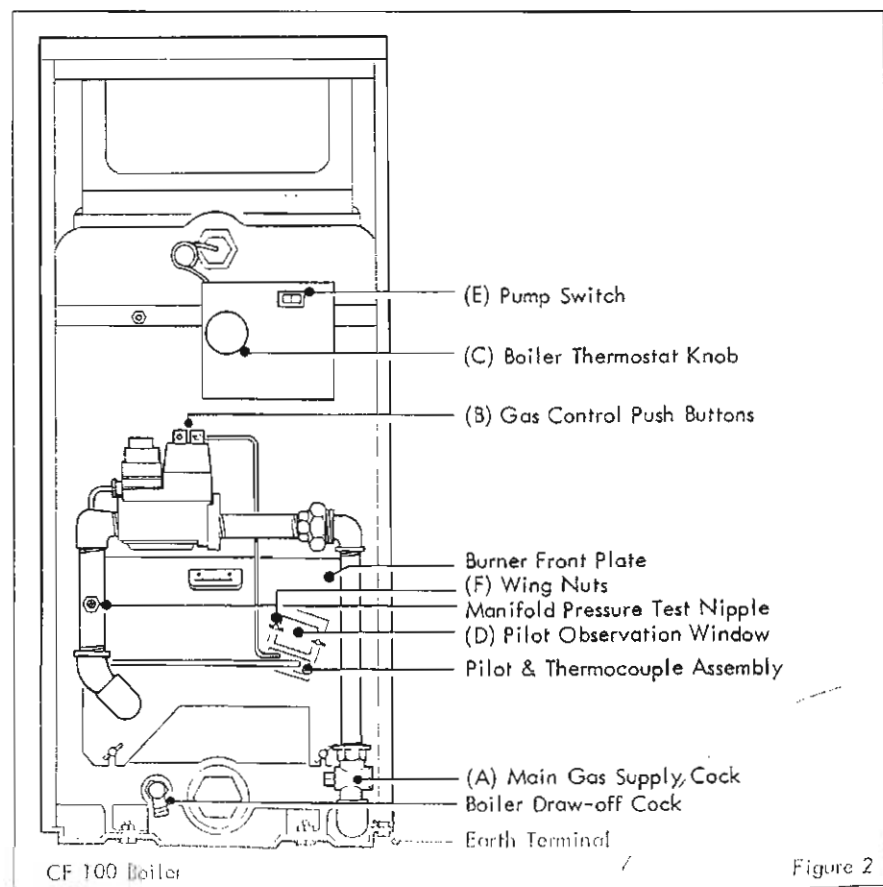


Figure 2

WARNING - THIS APPLIANCE MUST BE EARTHED

It is essential that the instructions in this booklet are strictly followed for safe and economical operation of your Concord boiler.

Controls

The Concord CF boilers are fitted with controls of advanced design which are easily adjusted to give a wide range of automatic programmes for central heating and domestic hot water supply. A programme can be chosen to suit individual requirements and give maximum comfort and convenience at minimum possible cost.

Adjusting the Controls (Figure 1)

With the boiler connected to a suitable system, the controls allow separate programmes to be chosen for the operation of (1) the central heating and (2) the domestic hot water supply. To do this, lift the control panel cover and adjust slide (F) for hot water supply and slide (E) for central heating. Times of operation are determined by adjusting the four tappets (C) on the time switch. Setting the Tappets

To adjust the switching tappets (C) press them gently in to unlock and, whilst maintaining pressure, move them round the dial to the required times. Release pressure and the tappets will become locked in the chosen positions. When setting the tappets, always set the ORANGE ("ON") tappet to the time of the first "on" operation required (normally early morning) and follow with GREEN ("OFF"), RED ("ON") and WHITE ("OFF"). Remember that as the dial rotates clockwise, the tappets must always be set by moving in an anti-clockwise direction. It is important to note that the tappets cannot be pushed past the indicator mark (D) at the top of the clock. It may therefore sometimes be necessary to turn the centre knob (B) until the tappet being adjusted is clear of the indicator mark. ALWAYS turn centre knob (B) CLOCKWISE.

Setting the Time Switch

Turn the centre knob (B) in a clockwise direction until the indicator (D) at the top coincides with the correct time. It is normal to feel the extra pressure of switching as tappets pass the indicator mark.

Programme Selection

To set the programmes for central heating and hot water supply, adjust slide switches (E) and (F) to the required position.

Do not try to force the 'central heating' slide switch (E) to the right of the 'hot water' slide switch (F). An interlock is fitted in the control panel to prevent this being done, because with most central heating systems, this would result in cold water circulating through the central heating system. Normally, no household ever wants central heating without hot water, so this should not be a problem; in the rare circumstances where this is a requirement the installer will have fitted the appropriate system, and will have removed the interlock.

Programmes

"Continuous" means "ON" throughout a 24 hour day. "All day" means "ON" daily between the times indicated by the ORANGE "ON" and WHITE "OFF" tappets. "Twice Daily" means "ON" twice daily between the times indicated by the ORANGE "ON" and GREEN "OFF" tappets and again between the times indicated by the RED "ON" and WHITE "OFF" tappets. For example, if you require domestic hot water all day between 06.30 and 23.00 and central heating between 06.30 and 10.00 and again between 17.00 and 23.00, set the clock tappets as follows:- ORANGE tappet 06.30, GREEN tappet 10.00, RED tappet 17.00 and WHITE tappet 23.00. Set the hot water slide switch to "all day" and the central heating slide switch to "twice daily" and the clock to the correct time. The system will then continue to operate to the chosen programme until the mains electricity supply is switched off or the tappet or slide switch settings are changed.

The neon lights (G) on the control centre panel will be illuminated to indicate when the central heating and hot water services are operating. Note, however, that with control systems arranged to give priority to the hot water service, the central heating neon will not glow until the hot water has reached the set temperature, even though the control centre settings call for both hot water and central heating. Normally,

however, even a cold cylinder should heat up within an hour or so.

IMPORTANT. If the mains electricity supply has been interrupted for any reason, the clock must be reset to the correct time when the supply is resumed. Similarly, the clock must be reset at the start and finish of British Summer Time. Finally, remember that the control centre is there to be used to advantage and programmes can easily be adjusted to suit changes in household routine and seasonal requirements. Wisely selected programmes will keep your fuel bills to the minimum consistent with adequate warmth and supplies of hot water.

Boiler Thermostat (H, Fig. 1)

If the system does not include a room thermostat or cylinder thermostat, the boiler thermostat should be set to give adequate central heating. In very cold weather, however, this may mean that the water in the taps becomes very hot. Note that water temperatures greater than 60°C (140°F) can cause scalding.

To Light the Boiler (See Figure 2)

1. Check that the main gas inlet cock (N) is turned on (i.e. rotated fully anti-clockwise).
2. Ensure that the thermostat knob (H) is turned to "OFF". Press in and release the gas control push button (J) marked with a RED DOT. Wait for 3 minutes.
3. Check that the electricity supply to the boiler is switched on and that all external controls fitted to the system (e.g. room thermostat, etc.) are in the "ON" position. Move the "hot water" slide switch (F) to the "continuous" position.
4. Press and hold down the gas control button (J) marked with a WHITE FLAME. Press and release the ignition button (M) repeatedly until the pilot flame is seen through the pilot observation window (L). (Pressing the ignition button produces an ignition spark at the pilot burner). Maintain pressure on button (J) for at least a further twenty seconds after the pilot flame has lit. (If the flame should go out when button (J) is released, press in and release the button marked with a RED DOT and wait for three minutes. Then repeat the lighting instructions above but wait for longer than twenty seconds after the pilot flame lights before releasing the button marked with

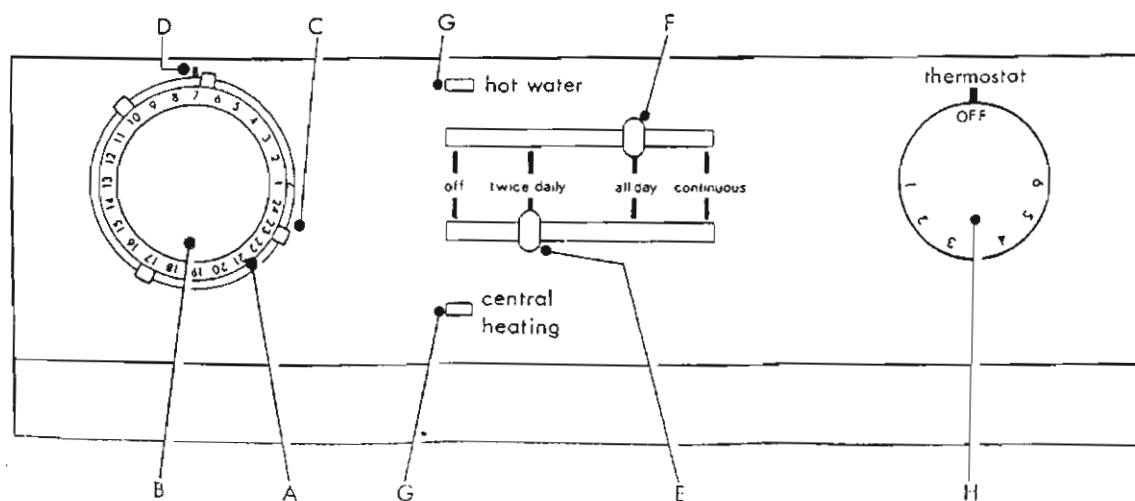


Figure 1

BLACK DOT). Wait for three minutes.
2. Switch on the electricity supply to the boiler and check that all external controls fitted to the system are in the operating position. Where appropriate check that the pump is switched on at the pump switch (E).

3. Loosen the wing nuts (F) raise the pilot observation window (D) and insert a lighted match, positioning the flame near the pilot burner and then turn the gas control knob (B) to the pilot position (marked with a BLACK STAR). Press the knob fully down and hold it down. Observe the pilot burner and continue to maintain downward pressure on knob (B) for at least twenty seconds after the pilot burner has lit and is burning steadily. Then release pressure on the knob and turn it to the on position (marked with a BLACK FLAME). Close observation window (D) and secure with wing nuts (F). (TAKE CARE NOT TO OVERTIGHTEN).

4. Should the pilot go out when pressure on the knob is released, push the knob down and return it to the off position (marked with a BLACK DOT). Then repeat the instructions in (3) above but wait for longer than twenty seconds after the pilot burner is lit before releasing pressure on knob (B).

5. Turn the boiler thermostat knob (C) to position 6 and the boiler will light. The boiler thermostat and system controls should then be adjusted to the desired settings. Table 1 shows the approximate flow temperatures corresponding to the numbers on the thermostat knob.

Table 1

Knob Setting	Water Flow Temperature	
	°C	°F
1	57	135
2	63	145
3	68	155
4	74	165
5	79	175
6	85	185

To Shut Off the Boiler

1. For short periods, turn the boiler thermostat knob (C) to off and switch off the pump. When heating is again required, turn the boiler thermostat knob to the desired setting and switch on the pump.

2. For longer periods (e.g. absence on holiday), turn the boiler thermostat knob to off and:-

(A) For all boilers EXCEPT 80 size (Figs. 1 & 2)

Press the button (B) on the gas control marked with a RED DOT.

(B) For 80 size BOILERS ONLY (Fig. 3)

Turn the gas control knob (B) to the pilot position (marked with a BLACK STAR), then press the knob down and turn to the off position (marked with a BLACK DOT).

3. Switch off the electricity. When relighting, follow the procedure explained under "To Light" above.

4. WARNING:- If frost is likely during a short absence from home, however,

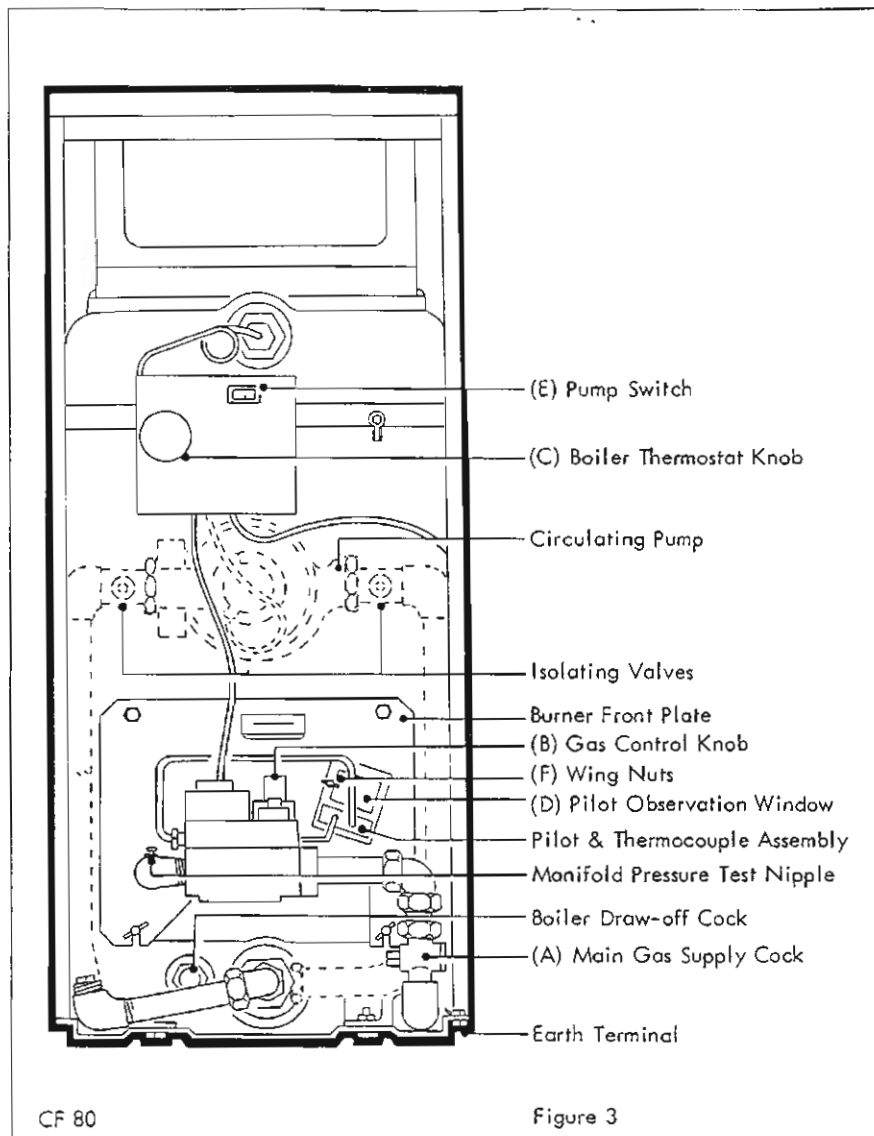


Figure 3

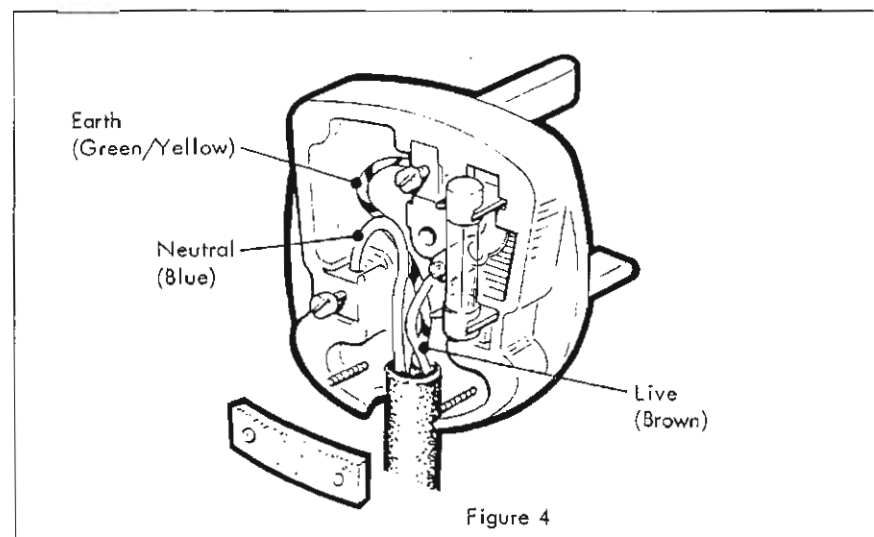


Figure 4

leave the boiler running at a reduced temperature. For longer periods, the entire system should be drained including the domestic water supply. If your system includes a frost-stat seek the advice of your installer.

MAINTENANCE

Regular servicing is essential to maintain efficient and reliable service. The user is strongly recommended to make a contract with the Gas Board or Heating Engineer for servicing, at least annually preferably at the end of the heating season.

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